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Dynamic Federalism and Wind Farm Siting

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A Thesis submitted to

The Faculty of
The George Washington University Law School
in partial satisfaction of the requirements
for the degree of Master of Laws
May 18, 2014

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Acknowledgements

The author wishes to thank Associate Dean Lee Paddock for his invaluable guidance in the completion of this thesis.

Disclaimer

Commander Hugh Brendan Burke serves in the U.S. Navy Judge Advocate General's Corps. This paper was submitted in partial satisfaction of the requirements for the degree of Master of Laws in Energy and Environmental Law at The George Washington University Law School. The views expressed in this paper are solely those of the author and do not reflect the official policy or position of the United States Navy, Department of Defense, or U.S. Government.

Abstract

Dynamic Federalism and Wind Farm Siting

An “all-of-the-above” energy policy, driven by concerns about climate change and energy security, has led to the emergence of wind power as an energy resource of choice. Wind energy conversion systems emit no greenhouse gases and discharge no water. Because wind is a free “fuel,” wind farms are considered reliable low-cost hedges against fluctuating fossil fuel prices.

Wind energy systems do have drawbacks, however. Among these, the mechanical and electromagnetic properties of wind turbines pose significant hazards and complications to U.S. Department of Defense (DoD) military installations and activities. These encroachment concerns, many of which are common to civil aviation, include interference with air traffic control and other radar systems. One ramification of these hazards and complications is the very real potential for conflict between the public’s interest in national security and its interest in developing renewable energy sources to protect the environment and achieve energy independence.

Because utility siting decisions are made at the state and local level, the federal government’s ability to guard against these hazards to civil and military aviation and other military activities is limited to advisory determinations issued by the Federal Aviation Administration.

In 2013, North Carolina enacted a statute requiring early and frequent consultation with DoD officials as a prerequisite to applying for and issuing permits to construct wind farms. This statute potentially operates to effectively allow DoD, a

federal agency with no independent federal authority to influence wind siting actions, to prevent the state from issuing a wind farm construction or expansion permit. This thesis will explore the recent North Carolina statute and explain how it could allow DoD to effectively prevent the state from issuing a wind farm construction permit. This thesis will also analyze whether it is advisable for a state to grant this type of "soft veto" to a federal government agency, and consider whether it is appropriate for DoD to exert this level of influence over the state permitting process. In the end this thesis argues that the North Carolina law can serve as a model for other states with installed or potential wind energy capacity and significant military presence.

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Introduction

Concerns about climate change and energy security have fundamentally changed the electric utility landscape in the United States. Policymakers charged with selecting energy resources face difficult decisions affecting competing interests. Just as fossil fuels and nuclear reactors come with social and ecological price tags that many observers believe make them unsustainable as sources of utility power, renewable energy sources each bring economic, environmental, and other burdens along with their benefits. Wind energy conversion systems are no exception.

Wind power systems use elevated turbines to capture mechanical energy from the wind to generate electricity.[1] In utility applications, the turbines are grouped together in large facilities commonly known as "wind farms."[2] Because wind is a free "fuel," wind farms (once they are constructed and operational) are considered reliable low-cost hedges

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[1] Am. Wind Energy Ass'n, *Wind 101: the basics of wind energy*, http://www.awea.org/Resources/Content.aspx?ItemNumber=900&navItemNumber=587 (accessed Mar. 7, 2014). Wind turbine technology will be described more fully in the next section of this thesis. *Infra* notes 36-50 and associated text.

[2] *See, e.g.,* World Wind Energy Ass'n, *WIND ENERGY - Technology and Planning*, http://wwindea.org/technology/ch02/estructura-en.htm (accessed Mar. 7, 2014). For the purpose of this thesis, the term "wind farm" refers to any utility scale wind energy generation facility.

against fluctuating fossil fuel prices.[3] But wind farms' greatest advantage over fossil-fuel power plants is that wind turbines emit no greenhouse gases.[4] According to the American Wind Energy Association, for every megawatt-hour of electricity generated by a wind facility rather than a fossil-fuel-burning power plant, 1,300 fewer pounds of carbon dioxide (CO_2) are released into the atmosphere.[5] This results in reducing 3,000 metric tons of CO_2 every year, per single turbine.[6] In 2012, the collective reduction credited to all U.S. wind farms totaled 79.9 million metric tons—as much CO_2 as 14 million automobiles would emit in a year.[7] Wind turbines also use and discharge essentially no water—a distinct advantage over fossil-fuel and nuclear plants, which require vast amounts of water for cooling.[8] No water used, no water polluted.[9]

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[3] Am. Wind Energy Ass'n, *The Cost of Wind Energy in the U.S.*, http://www.awea.org/Resources/Content.aspx?ItemNumber=5547 (accessed Mar. 7, 2014).

[4] Am. Wind Energy Ass'n, *Wind Energy & Reducing Greenhouse Gas Emissions*, http://awea.rd.net/Resources/Content.aspx?ItemNumber=5097 (accessed Mar. 7, 2014).

[5] *Id*.

[6] *Id*.

[7] *Id*. These figures represent a 3.6% reduction in CO_2 emissions from the utility power industry across all fuel sources. *Id*.

[8] Am. Wind Energy Ass'n, *supra* note 1, http://www.awea.org/Resources/Content.aspx?ItemNumber=900&navItemNumber=587.

[9] Nat'l Geographic Soc'y, *Wind Power Information, Wind Power Facts*, http://environment.nationalgeographic.com/environment/global-warming/wind-power-profile/ (accessed Mar. 7, 2014).

Wind energy systems do have drawbacks, however. While wind is free, it is not constant.[10] When the wind is not blowing, the rotors do not turn, and the turbines do not generate power.[11] Given the technology presently available, excess electricity wind turbines generate when the wind *is* blowing cannot be stored cost-effectively for later transmission and distribution.[12] Utility companies cannot then rely exclusively on wind and must supplement wind farms' output with other resources, generally conventional fuels.[13] The startup costs for wind facilities are high,[14] especially given the need for redundant generation capacity. Because geographic locales suitable for wind farms are

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[10] Patricia E. Salkin & Ashira Pelman Ostrow, *Cooperative Federalism and Wind: A New Framework for Achieving Sustainability*, 37 HOFSTRA L. REV. 1049, 1061-62 (2009).

[11] 3 ALTERNATIVE ENERGY 332 (Neil Schlager & Jayne Weisblatt eds., 2006).

[12] Eric Jelinski, *The Inconvenient Truth about Wind Turbines*, http://www.windturbinesyndrome.com/2012/the-inconvenient-truth-about-wind-turbines-from-an-engineer-canada/ (accessed Mar. 7, 2014).

[13] Salkin & Ostrow, *supra* note 10, at 1062.

[14] ExploringGreenTechnology.com, *Wind Energy Facts*, http://exploringgreentechnology.com/wind-energy/wind-energy-facts/ (accessed March 7, 2014). One wind energy opponent asserts that per megawatt (MW), wind facilities require five times or more the amount of construction material than is required to build a nuclear plant. Jelinsky, *supra* note 12, at http://www.windturbinesyndrome.com/2012/the-inconvenient-truth-about-wind-turbines-from-an-engineer-canada/.

often far from population centers, transmission costs are also high.[15] There is no consensus that wind energy is economically viable in the long term.[16]

Wind energy also has environmental drawbacks. Utility-scale wind farms require large swaths of usually pristine land or water.[17] Outdoors enthusiasts, adjacent landowners, and other parties interested in such areas often consider the turbines to be eyesores.[18] Neighbors complain about the noise from the turbines and the flicker effect caused by the sun shining through the rotating blades.[19] The turbines can interfere with television and radio reception.[20] Wind farms are known to kill birds and bats.[21] These fatalities result from collision as well as habitat and behavior disruption.[22]

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[15] 3 ALTERNATIVE ENERGY, *supra* note 11, at 321.

[16] *See, e.g.*, Energy Informative, *Wind Energy Pros and Cons*, http://energyinformative.org/wind-energy-pros-and-cons/ (accessed Mar. 7, 2014) (noting that "[t]he cost-competitiveness of wind power is highly debatable").

[17] 3 ALTERNATIVE ENERGY, *supra* note 11, at 321.

[18] *Id*. at 321-22.

[19] *Id*. at 331.

[20] *Id*. at 332.

[21] NAT'L WIND COORDINATING COLLABORATIVE, WIND TURBINE INTERACTIONS WITH BIRDS, BATS, AND THEIR HABITATS: A SUMMARY OF RESEARCH RESULTS AND PRIORITY QUESTIONS 2 (2010), *available at* http://www1.eere.energy.gov/wind/pdfs/birds_and_bats_fact_sheet.pdf.

[22] *Id*.

The mechanical and electromagnetic properties of wind turbines (which will be explored in detail in the next section of this thesis[23]) pose significant hazards and complications to U.S. Department of Defense (DoD) military installations and activities.[24] These encroachment[25] concerns, many of which are common to civil

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[23] *Infra* notes 43-50 and accompanying text.

[24] *See generally* OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, U.S. DEP'T OF DEF., THE EFFECT OF WINDMILL FARMS ON MILITARY READINESS (2006), *available at* http://www.acq.osd.mil/dodsc/library/Congressional%20Report%20Impact%20of%20Wind%20Turbines%202006%20AFRL.pdf (reporting the findings of a 2006 DoD study "on the effects of wind farms on air defense and missile warning radars and the resulting potential impact on military readiness").

[25] "Encroachment" refers to "[i]ncompatible development surrounding military installations that threatens the ability to carry out the training [or] testing mission." U.S. DEP'T OF DEF., U.S. FISH & WILDLIFE SERV., & ASS'N OF FISH & WILDLIFE AGENCIES, DOD NATURAL RESOURCE PROGRAMS & INRMP IMPLEMENTATION: ENCROACHMENT slide 5-2 (2009), *available at* http://www.dodworkshops.org/files/Training/SikesModules/Mod5_Encroachment_FINAL_july09_1_.pdf.

aviation,[26] include interfering with air traffic control and other radar systems.[27] One ramification of these hazards and complications is the very real potential for conflict between the public's requirement for national security and its interest in developing renewable energy sources to protect the environment and achieve energy independence.

Despite these drawbacks and the various disputes about its relative merits, wind energy figures very prominently in U.S. energy policy. President Obama described that policy in March 2012: "We can't have an energy strategy for the last century that traps us in the past. We need an energy strategy for the future—an all-of-the-above strategy for the twenty-first century that develops every source of American-made energy."[28]

But electric utility siting decisions are made at the state and local level, so this national policy is implemented on somewhat of an ad hoc basis.[29] Regarding hazards to civil and military aviation and other military activities, the federal government's ability to

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[26] *See generally* AIRSPACE & SAFETY INITIATIVE WINDFARM WORKING GROUP, MANAGING THE IMPACT OF WIND TURBINES ON AVIATION 10-24 (2013), *available at* http://airspacesafety.com/wp-content/uploads/2013/09/20130701ManagingTheImpactOfWindTurbinesOnAviation_Script_FINAL_V1.pdf (surveying wind turbine effects on aviation).

[27] OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 26-41.

[28] The White House, Energy, *Climate Change and Our Environment*, http://www.whitehouse.gov/energy (accessed Mar. 7, 2014).

[29] *Infra* notes 118-53 and accompanying text.

protect its interests is limited to advisory determinations issued by the Federal Aviation Administration (FAA).[30]

In 2013, North Carolina enacted a statute[31] requiring early and frequent consultation with DoD officials as a prerequisite to applying for or issuing permits to construct wind farms.[32] This thesis will explain how this statute operates to effectively allow DoD—a federal agency[33] with no independent federal authority to influence wind siting actions—to prevent the state from issuing a wind farm construction or expansion permit.[34]

This thesis will begin by examining the physical characteristics of wind turbines and explaining how they affect air traffic control and military activities. Then, it will discuss the development of electricity generation regulation in the United States,

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[30] *Infra* notes 157-87 and accompanying text.

[31] 2013 N.C. Sess. Laws 51 (codified at N.C. GEN. STAT. § 143-215.115 et. seq. (2013)).

[32] *Infra* notes 229-67 and accompanying text.

[33] The term "agency" is subject varying connotations with a breadth of specificity, but is used broadly here and is not intended to convey any specific adjudicative authority or other distinct status. *See* BLACK'S LAW DICTIONARY 63 (7th ed. 1999) (defining "agency" as "[a] department or other instrumentality of the executive branch of the federal government . . ."). *See also* Administrative Procedure Act, 5 U.S.C. § 551 (2012) (defining "agency" to include "each authority of the Government of the United States, whether or not it is within or subject to review by another agency . . .").

[34] *Infra* notes 248-67 and accompanying text.

including a survey of how wind farm siting regimes vary among the states. The following section will address the ways in which the federal government, with special emphasis on FAA and DoD, can influence state wind farm siting actions to protect aviation and military interests. This thesis will then explore the recent North Carolina statute and explain how it could allow DoD to effectively prevent the state from issuing a wind farm construction permit. The next section will analyze whether it is advisable for a state to grant this type of *soft veto*[35] to a federal government agency. The following section will consider whether it is appropriate for DoD to exert this level of influence over the state permitting process. Finally, this thesis will argue that the North Carolina law can serve as a model for other states with installed or potential wind energy capacity and significant military presence.

Technical Considerations

Before considering the relationship between wind energy facility siting and military operations, it is necessary first to understand the physical characteristics of wind turbines and how they operate, how radar systems operate, and how wind turbines affect radar and other military aviation systems.

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[35] The term "veto" describes the "power of one governmental branch to prohibit an action by another branch . . . ." BLACK'S LAW DICTIONARY 1558. The term "soft veto" in this thesis represent's the author's conceptualizing DoD's ability to influence a state wind facility permit decision, especially in the negative.

Wind turbines evolved from windmills, which have been in use for over a millennia.[36] The earliest windmills, originating in the Middle East and spreading to Europe, were used, as the name implies, to mill or grind wheat and other grains.[37] Europeans later adopted the technology for other purposes, such as using the mechanical energy captured by the rotating sails to reclaim wetlands by pumping water away from low ground.[38] Windmills were ubiquitous until the industrial revolution, when steam power, electric motors, and internal combustion provided more reliable sources of mechanical power, not subject to variations of wind direction and speed.[39]

But the advent of utility electric power did not signal the end for wind energy. The turn of the twentieth century saw the development of turbines designed to use wind-powered rotors to turn dynamos that generate electricity for local use, transmission, or storage in batteries.[40] Wind turbine technology languished to some extent, however, under the assumption that some combination of fossil fuels and nuclear power would serve the world's energy needs indefinitely.[41] It was not until the 1970s—when faced with the confluence of a burgeoning environmental movement and the reality of limited oil supplies subject to political and other societal instability—that the United States and

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[36] PAUL A. LYNN, ONSHORE AND OFFSHORE WIND ENERGY: AN INTRODUCTION 9 (2011).

[37] *Id*.

[38] *Id*. at 9-10.

[39] *Id*. at 12-13

[40] *Id*. at 13

[41] *Id*.

other nations began in earnest to develop wind turbines for electricity generation at the utility scale.[42]

The typical wind turbine today uses a three-bladed design on a horizontal axis.[43] Blades can vary from 34 to 55 meters in length, depending on the turbine's generation capacity.[44] The rotor is mounted to a nacelle or housing situated atop a tower.[45] Utility-scale turbines (those rated 100 kilowatts or higher) in the United States have towers ranging from 80 to 100 meters in height.[46] A height of 100 meters is fairly typical for a two-megawatt (MW) wind turbine,[47] which is about the average output for turbines installed in the United States.[48] Taking the rotor diameter into consideration, then, an average U.S. wind turbine's total height would be approximately 114 meters (374 feet) to 155 meters (509 feet).

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[42] *Id*. at 13-15

[43] *Id*. at 15.

[44] Am. Wind Energy Ass'n, *Anatomy of a Wind Turbine*, http://awea.rd.net/Resources/Content.aspx?ItemNumber=5083&RDtoken=29819&userID=4379 (accessed Mar. 7, 2014).

[45] LYNN, *supra* note 36, at 15.

[46] Am. Wind Energy Ass'n, *supra* note 1, http://www.awea.org/Resources/Content.aspx?ItemNumber=900&navItemNumber=587.

[47] LYNN, *supra* note 36, at 66.

[48] Am. Wind Energy Ass'n, *supra* note 44, http://awea.rd.net/Resources/Content.aspx?ItemNumber=5083&RDtoken=29819&userID=4379.

For onshore installations, the towers are mounted on concrete foundations or secured to existing rock formations using long steel rods.[49] Offshore turbines are either secured to the sea floor with pilings, built into gravity foundations that sit on the bottom, or set to float on the surface while tethered or anchored to the bottom.[50]

Of particular concern to DoD is the effect that these towering vertical structures have on radar systems that serve its installations and training and operating areas.[51] Radar[52] systems use radio signals to remotely measure location, velocity, and shapes of objects.[53] The basic principle involves a transmitter that emits a pulse of radio energy into the atmosphere.[54] When the radio signal contacts an object (such as a cloud, mountain, airplane, wind turbine, or any other "target"), some or all of the signal is reflected back in the direction from which it originated.[55] A receiver or scanning antenna,

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[49] LYNN, *supra* note 36, at 98.

[50] *Id*. at 162-166.

[51] *See generally* OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24.

[52] Although its usage has evolved to that of a common noun or common adjective, the term "radar" is an acronym dating from World War II meaning "*ra*dio *d*etecting *a*nd *r*anging." THE FACTS ON FILE ENCYCLOPEDIA OF WORD AND PHRASE ORIGINS 604 (Robert Hendrickson ed., 3d ed. 2004) (emphasis in original).

[53] 14 HOW IT WORKS - SCIENCE AND TECHNOLOGY 1893 (3d ed. 2003).

[54] *Id*. at 1894-95.

[55] *Id*. at 1894.

which may be colocated with or separate from the transmitter, detects the returning pulse of radio energy.[56] This arrangement is depicted in figure 1.

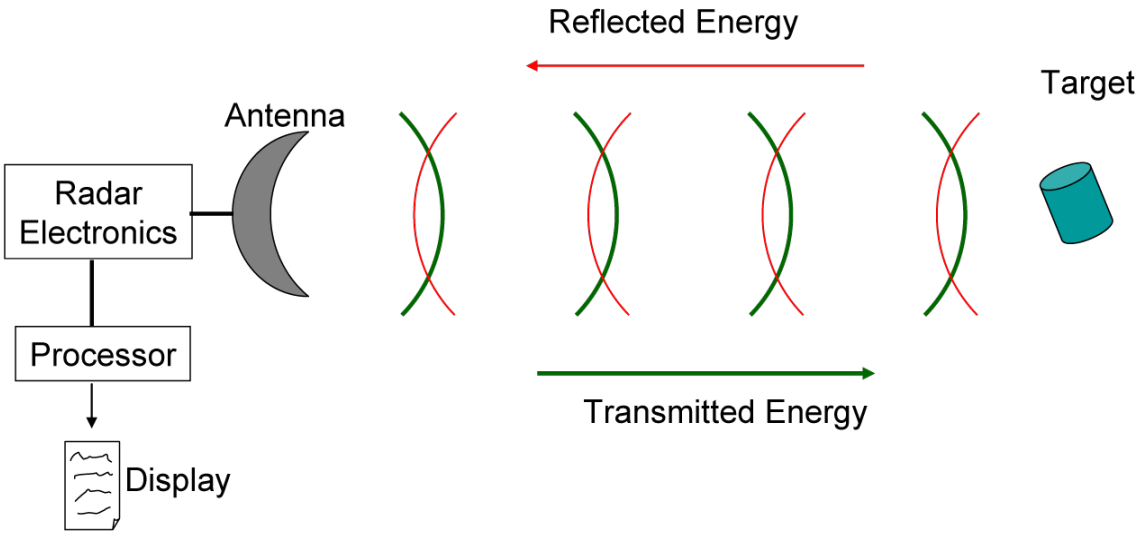

Figure 1 - Basic radar system operation[57]

By analyzing the time elapsed from the transmission until the receipt of the returned pulse, the system ascertains the distance the pulse traveled and therefore the distance from the station to the object.[58] Because many radar antennae rotate in 360 degrees, by accounting for the angular position the system can determine the azimuth or

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[56] *Id*.

[57] Image reproduced from OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 11 fig. 2.

[58] 14 HOW IT WORKS - SCIENCE AND TECHNOLOGY, *supra* note 53, at 1894.

direction from the station to the target object.[59] Similarly, an antenna rotating on a horizontal axis or designed with other advanced properties can also determine an object's altitude.[60]

The foregoing description pertains to systems known as primary surveillance radar (PSR).[61] Besides relying on PSR, air-traffic control organizations employ secondary surveillance radar (SSR) systems.[62] For an SSR system, the target object (usually an aircraft) is equipped with a transponder—a device that transmits a radio signal to supplement the reflected pulse with amplifying information such as identity, flight number, and altitude as measured within the aircraft.[63] Federal aviation regulations require that aircraft operating in the busiest classes of airspace be equipped with transponders.[64] PSR and SSR image returns combine to give air controllers a real-time, four-dimensional representation of the airspace for which they are charged to route aircraft and maintain separation.[65]

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[59] *Id*.

[60] *Id*. at 1895.

[61] *Id*. at 1897. *See also* OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 17 (discussing PSR).

[62] 14 HOW IT WORKS - SCIENCE AND TECHNOLOGY, *supra* note 53, at 1897.

[63] *Id.*

[64] 14 C.F.R. § 91.215(b) (2014).

[65] Raytheon Co., *Technology Today - Air Traffic Control Wind Farm Interference Mitigation at Raytheon*, http://www.raytheon.com/newsroom/technology_today/2012_i2/airtraffic.html (accessed Mar. 7, 2014).

The accuracy—and therefore utility—of either type of radar system rely on the strength of the returned signals.[66] A number of factors can decrease signal strength, such as increased distance, decreased target size, atmospheric conditions, and intervening physical objects—whether natural or man-made.[67] Objects like hills or buildings can block transmitted radar energy outright, resulting in the system's inability to detect a desired target (such as an aircraft) in the intervening object's radar "shadow."[68] Figure 2 depicts the radar shadow effect.

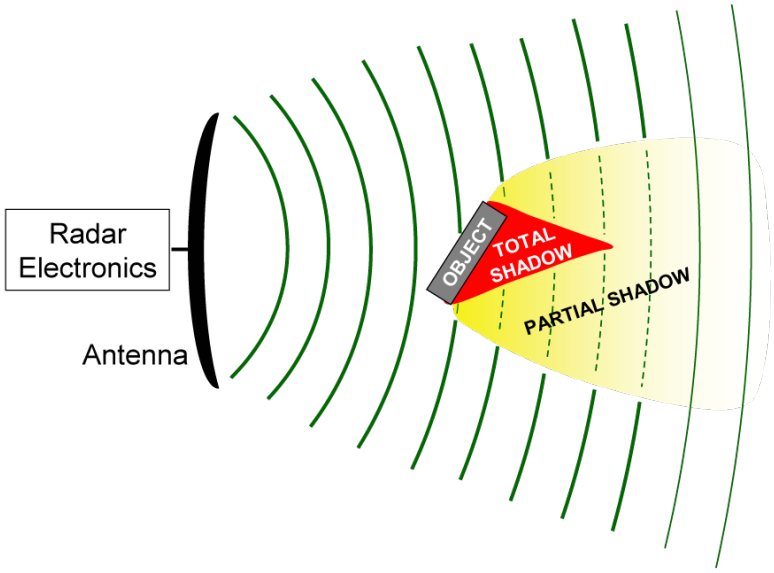

Figure 2 - Radar signal blockage[69]

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[66] OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 11.

[67] *Id*. at 10.

[68] *Id*. at 13.

[69] Image reproduced from *id*. at 14 fig. 5.

Even if the intervening object does not altogether block a radar signal, its size or shape may cause the signal to diffract and weaken.[70] These shadowing effects and diffractions (depicted in figure 3) contribute to unwanted return that operators call "clutter."[71] Radar clutter and signal weakness detract from the system's ability to detect intended targets, differentiate between objects close to one another, and accurately measure objects' movement.[72]

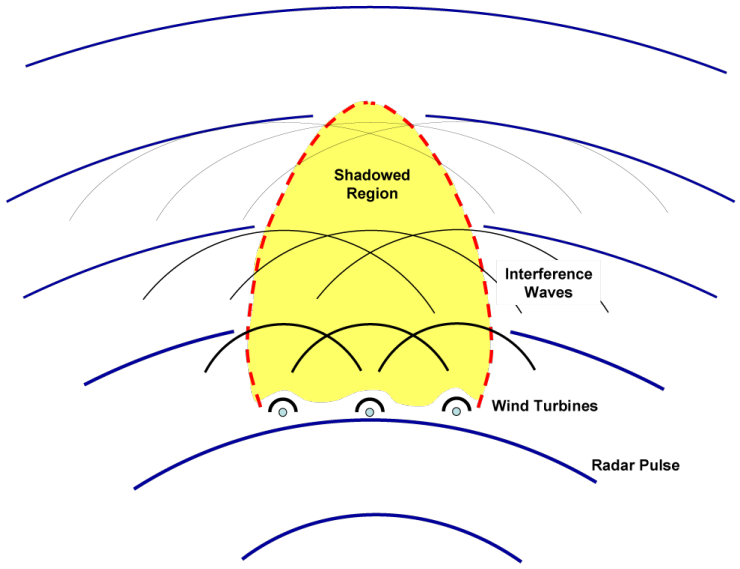

Figure 3 - Radar signal diffraction[73]

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[70] *Id*. at 13-14.

[71] *Id*. at 11. "Clutter" is "any unwanted reflected signal that enters the radar receiver and can interfere with the determination of the desired attributes of the target of interest." *Id*.

[72] *Id*.

[73] Image reproduced from *id*. at 14 fig. 6.

PSR systems rely heavily on Doppler frequency shift to locate and track air targets.[74] Put simply, Doppler shift refers to the change in the returned radio wave frequency due to the changes in the relative distance between the station and the target.[75] For a stationary radar site and a stationary target, or when the distance between both is otherwise unchanging, the frequency of the transmitted signal should be roughly the same as the reflected return signal.[76] If the target is moving closer to the station, the frequency of the returned signal will "shift" slightly higher.[77] Likewise, if the target is moving away from the station, the return frequency will be slightly lower.[78] The magnitude of the shift indicates the relative speed of the target.[79]

Rotating wind turbine blades display Doppler shifts similar or identical to those associated with moving aircraft.[80] This is one of the primary challenges that wind farms pose if they are situated near airport approach or departure patterns or under low-altitude

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[74] Raytheon Co., *supra* note 65, http://www.raytheon.com/newsroom/technology_today/2012_i2/airtraffic.html.

[75] OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 16.

[76] *Id*.

[77] *Id*.

[78] *Id*. at 16-17.

[79] *Id*. at 17.

[80] Raytheon Co., *supra* note 65, http://www.raytheon.com/newsroom/technology_today/2012_i2/airtraffic.html.

military air training areas.[81] To a radar operator, "a wind turbine looks like a real aircraft . . . ."[82] The operator may track a false target, delete a real target, or move a real target to an incorrect position because of the faulty information displayed.[83] In 2008, the Court of Appeals for the District of Columbia Circuit characterized the problem as follows:

> Because each wind turbine has a radar "signature approximately that of a jumbo jet," the wind farm "could likely appear as a fleet of jumbo jets" on the radar screen and confuse air traffic controllers. In addition, the turbines could intermittently disappear from the screen and reappear a few seconds later—hampering "the ability of the air

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[81] *Id*.

[82] *Id*. At peak generating efficiency, turbine blade tips spin at 78 - 158 knots (nautical miles per hour), a speed similar to that exhibited by a helicopter or light airplane. OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 28. The spinning blades themselves present a radar cross section as big as or larger than such aircraft. *Id*.

[83] Raytheon Co., *supra* note 65, http://www.raytheon.com/newsroom/technology_today/2012_i2/airtraffic.html.

> traffic controller to successfully control aircraft in the area."[84]

Further, in some cases air traffic controllers have mistaken radar returns from large wind farms to be adverse weather conditions.[85] At least one radar manufacturer characterizes wind turbines' effect on air traffic control systems as "severe."[86]

Radar applications are not limited to the air traffic control context.[87] Other uses include air defense, missile warning, and weather detection.[88] Obstructional interference and clutter can degrade the performance of all these radar applications.[89] For example, the lowest point of a radar signal transmitted fifteen kilometers from a missile defense

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[84] *Clark County, Nev., v. Fed. Aviation Admin.*, 522 F.3d 437, 442 (D.C. Cir. 2008) (quoting an expert study offered by petitioner). The proposed wind farm in question, to be located a few miles from a planned airport near Las Vegas, Nev., was to include 83 turbines that were 400 feet high. *Id*. at 438.

[85] *See generally* Felix A. Losco & Thomas F. Collick, *When Wind, Wind Turbines, and Radar Mix—A Case Study*, 68 A.F. L. REV. 235 (2012) (detailing radar interference observed by air traffic controllers at Travis Air Force Base, Calif., caused by a 700-turbine wind farm).

[86] Raytheon Co., *supra* note 65, http://www.raytheon.com/newsroom/technology_today/2012_i2/airtraffic.html.

[87] OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 15.

[88] *Id*.

[89] *Id*. at 16.

early warning radar is approximately 510 feet[90]—virtually the same height as a typical utility-scale wind turbine as discussed above.[91]

In 1994, the United Kingdom's Ministry of Defence (MoD) launched a series of studies into wind farms' effects on radar systems.[92] Importantly—and unexpectedly—a 2004 trial demonstrated that PSR ability to track and detect aircraft was degraded even if the aircraft were flying at an altitude as high as 2,000 feet above ground level (approximately four or more times the height of typical turbines).[93] Besides the inability to effectively track different types of aircraft used in the trial, several false contacts were reported at all altitudes.[94] Later MoD trials confirmed these findings.[95] The degradations were attributed to shadowing and diffraction caused by the wind turbines.[96]

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[90] *Id*. at 20.

[91] *Supra* notes 43-50 and accompanying text.

[92] OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 33-36.

[93] *Id*. at 33.

[94] *Id*. at 34.

[95] *Id*. at 35.

[96] *Id*. at 36.

To supplement the data accrued in the U.K. trials, DoD conducted tests at Tyler, Minnesota, in 2004.[97] The results were consistent with MoD's.[98] The Tyler results also suggested that in adverse weather conditions, wind-farm-induced radar capability degradations occurred over a larger geographic area—even beyond the limits of the wind farm itself.[99]

While the studies discussed above focused on land-based wind energy systems, offshore wind turbines present the same radar interference issues as onshore systems.[100]

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[97] *Id*. at 38. Earlier U.S. testing (at King Mountain, Texas, in 2002) had suggested that wind farm effects on air traffic control radar were minimal, but the methodology of those tests were later determined to be deficient. *Id*. at 36-37. Specifically, the low number of flights performed and the profiles of the flights (altitude and distance from radar station) resulted in biased results. *Id*. at 37.

[98] *Id*. at 39-40.

[99] *Id*. at 40.

[100] Samuel D. Perkins & Melanie A. Everett, *Offshore Wind Strategy Rollout: FAQs*, *in* OFFSHORE WIND POWER: CHALLENGES, ECONOMICS AND BENEFITS 227, 231 (Samuel D. Perkins & Melanie A. Everett eds. 2011).

Offshore wind energy facilities also bring additional challenges.[101] For example, a 2013 study determined that marine surface-search radars could have difficulty tracking vessels in or near wind farms.[102]

Industry and government stakeholders have achieved limited success mitigating wind-turbine-induced radar interference.[103] Measures implemented on the radar side include hardware and software upgrades and installing "gap-filling" radar stations to cover the wind farms' radar shadows.[104] Regarding the turbines themselves, manufacturers have applied "stealth" coatings to the exterior of the rotor blades.[105] Of

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[101] *See generally* HAO LING ET AL., FINAL REPORT DE-EE0005380 - ASSESSMENT OF OFFSHORE WIND FARM EFFECTS ON SEA SURFACE, SUBSURFACE AND AIRBORNE ELECTRONIC SYSTEMS (2013), *available at* http://www1.eere.energy.gov/wind/pdfs/assessment_offshore_wind_effects_on_electronic_systems.pdf (reporting the results of a study commissioned by the U.S. Department of Energy (DoE) regarding offshore wind turbine effects on electronic systems).

[102] *Id*. at vii.

[103] Nat'l Renewable Energy Lab., *Large-Scale Offshore Wind Power in the United States: Assessment of Opportunities and Barriers*, *in* OFFSHORE WIND POWER: CHALLENGES, ECONOMICS AND BENEFITS, *supra* note 100, at 1, 163.

[104] *Id*. The "gap-filling" radar sites serve "to fill in for radar coverage that may be lost due to wind farm clutter." Perkins & Everett, supra note 100, at 231.

[105] *Id*.

course, these measures have not proven to be panaceas, especially considering their increased costs and engineering requirements.[106]

Radar interference is not the only way that wind turbines can affect military operations.[107] As is the case with most large electromechanical machinery, wind turbines have distinct electromagnetic signatures.[108] This unintended effect on the electromagnetic spectrum in the area around a wind farm can interfere with communications gear, surveillance systems, and offensive and defensive electronic warfare equipment.[109] Further, offshore turbines can interfere with underwater acoustic detection systems.[110]

Setting aside the risks associated with radar and other electromagnetic interference, wind turbines and wind farms also pose a far less technologically abstruse

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[106] Raytheon Co., *supra* note 65, http://www.raytheon.com/newsroom/technology_today/2012_i2/airtraffic.html.

[107] OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 48-51.

[108] *Id*. at 50.

[109] *Id*. Electronic warfare is "[m]ilitary action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy." Dep't of Def., electronic warfare, http://www.dtic.mil/doctrine/dod_dictionary/ (accessed Mar. 7, 2013).

[110] HAO LING ET AL., *supra* note 101, at ix.

hazard to aviation—the risk of collision by low-flying aircraft.[111] Air traffic approaching and departing from airports operates at altitudes equivalent to or lower than the heights of common utility-scale wind turbines discussed above.[112] Military aircraft use certain training routes at similarly low altitudes to practice low-level navigation and other maneuvers.[113] For the most part, these risks are well understood and can be mitigated by proper planning, installing warning lights, publishing notifications of the hazards, and classifying affected airspace appropriately.[114]

Wind farm construction activity, as well as the steady-state vehicular and personnel traffic associated with operational wind farms, bring security concerns to

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[111] Nat'l Renewable Energy Lab., *supra* note 103, at 163. These risks are similar to those posed by buildings, cellular phone towers, and radio broadcast antennae. OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 49.

[112] FED. AVIATION ADMIN., AERONAUTICAL INFORMATION MANUAL 4-3-1, *available at* http://www.faa.gov/air_traffic/publications/atpubs/aim/aim0403.html#aim0403.html.1.

[113] *Id*. at 3-5-2, *available at* http://www.faa.gov/air_traffic/publications/atpubs/aim/aim0305.html#aim0305.html.1

[114] Nat'l Renewable Energy Lab., *supra* note 103, at 162-63. Warning lights, however, invite additional challenges from neighboring land owners and citizens' groups. PHILIP WARBURG, HARVEST THE WIND—AMERICA'S JOURNEY TO JOBS, ENERGY INDEPENDENCE, AND CLIMATE STABILITY 137-38 (2012). The lights also could attract migratory birds, increasing the already substantial likelihood of avian kills associated with wind farm operation. *Id*.

nearby military bases and other sensitive DoD infrastructure.[115] Additionally, the height of the towers can allow enhanced visibility or sensor access over DoD facilities and operations that would otherwise be unobservable from ground level by unauthorized personnel.[116]

The technological and other risks to civil aviation, military aviation, and other military activities are but a small sample of the environmental, economic, and social impacts that a permitting authority must consider when reviewing a proposed wind farm site.[117] The next section of this thesis will explore the development of electricity generation facility permitting in the United States, both in general and in the specific context of wind turbines.

State and Local Regulation of Electric Power Generation Facilities

When Thomas Edison flipped the switch—so to speak—at the Pearl Street Station in New York City on September 4, 1882, the U.S. electric utility industry was born.[118] Pearl Street Station is recognized as the first commercial electricity generation facility in

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[115] OFFICE OF THE DIR. OF DEF. RESEARCH & ENG'G, *supra* note 24, at 50.

[116] *Id*.

[117] *See generally* Patricia E. Salkin, *Facility Siting and Permitting*, *in* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES 95 (Michael B. Gerrard ed. 2011) (surveying site permitting considerations for renewable energy projects).

[118] JOSEPH P. TOMAIN, ET AL., ENERGY LAW AND POLICY 446 (1989).

the United States.[119] Servicing 85 customers, this facility and those like it, which developed soon afterward, could only be characterized as local interests.[120] They were therefore initially subject only to municipal regulation, if any.[121] As the industry grew with increased demand, smaller producers combined to form or were absorbed by larger

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[119] *Id*.

[120] THE ENERGY LAW GROUP, ENERGY LAW AND POLICY FOR THE 21ST CENTURY 12-8 to 12-9 (2000).

[121] TOMAIN ET AL., *supra* note 118, at 448.

firms.[122] This growth led to the emergence of state, rather than local, regulation of the electric industry, including the siting of generation facilities.[123]

Congress moved to clarify the distinctions between federal and state responsibilities in the regulation of the electric industry in 1935.[124] The Federal Power

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[122] THE ENERGY LAW GROUP, *supra* note 120, at 12-9.

[123] TOMAIN ET AL., *supra* note 118, at 448. The electric industry comprises three distinct phases: generation, transmission, and distribution. THE ENERGY LAW GROUP, *supra* note 120, at 12-1. Because wind farms are electricity generators, this thesis is most concerned with the generation phase, and therefore the discussion and analysis will deal primarily with permitting schema and other regulations on generation facility siting. It bears noting, however, that *facility siting* for all three phases of the industry is subject to state regulation. *See* Amy L. Stein, *The Tipping Point of Federalism*, 45 CONN. L. REV. 217, 219 n.2 (2012) (citing 16 U.S.C. § 824(b)(1) (2012)). *But see* 16 U.S.C. § 824p (granting the Federal Energy Regulatory Commission (FERC) authority to issue construction permits for transmission facilities to "be used for the transmission of electric energy in interstate commerce" in areas designated by the Secretary of Energy as "national interest electric transmission corridor[s,]" provided that no state may approve the project in question, that the project does not meet state permitting criteria due to its interstate nature, or that a state commission or other permitting entity has withheld approval or imposed conditions on approval which would undercut national interests).

[124] Stein, *supra* note 123, at 220.

Act[125] resolved a perceived "gap" in the regulation of interstate transmission and distribution of electricity,[126] but left generation (as well as *intrastate* transmission and distribution) in the purview of the states.[127] It has remained there for nearly eight decades.[128] This reservation of authority applies to the siting of renewable energy generation facilities as well.[129]

There is no uniform approach to wind farm site permitting among the states.[130] In approximately a quarter of states, facility permitting is a local zoning matter.[131] In others,

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[125] 16 U.S.C. § 791a et. seq.

[126] *See* THE ENERGY LAW GROUP, *supra* note 120, at 12-11 to 12-12 (discussing *Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Elec. Co.*, 273 U.S. 83 (1927), and the "Attleboro Gap" as the impetus for the Federal Power Act).

[127] 16 U.S.C. § 824(b)(1).

[128] Stein, *supra* note 123, at 221.

[129] Salkin, *supra* note 117, at 103. Another reason that state and local governments have a preeminent role in wind farm siting is because of its land-use-planning implications—traditionally an area of local control. Salkin & Ostrow, *supra* note 10, at 1051.

[130] ASS'N OF FISH & WILDLIFE AGENCIES & U.S. FISH & WILDLIFE SERV., WIND POWER SITING REGULATIONS AND WILDLIFE GUIDELINES IN THE UNITES STATES 2 (2007), *available at* http://www.fws.gov/habitatconservation/windpower/afwa%20wind%20power%20final%20report.pdf.

[131] *Id*. Local wind turbine ordinances may address issues including height restrictions, setback requirements, color limitations, and noise limits. Salkin, *supra* note 117, at 104-05.

the state public utilities commission issues permits.[132] Still others divide responsibility based on the size of the prospective facility, with local governments permitting smaller scale projects while state agencies site the larger facilities.[133]

Only a handful of states have statutory code provisions or administrative rules specifically addressing wind power siting.[134] They include Colorado,[135] Minnesota,[136] North Carolina,[137] North Dakota,[138] Oregon,[139] South Dakota,[140] Vermont,[141] and

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[132] ASS'N OF FISH & WILDLIFE AGENCIES & U.S. FISH & WILDLIFE SERV., *supra* note 130, at 2.

[133] Salkin & Ostrow, *supra* note 10, at 1066.

[134] *See generally* ASS'N OF FISH & WILDLIFE AGENCIES & U.S. FISH & WILDLIFE SERV., *supra* note 130 (surveying wind power information for all 50 states, including points of contact, installed power in MW, renewable portfolio standards, renewable energy incentives, siting authorities, and wildlife guidelines).

[135] COLO. REV. STAT. § 38-30.7-101 et seq. (2013).

[136] MINN. STAT. § 216F.01 et seq. (2013); MINN. R. 7854.0100 et seq. (2013).

[137] N.C. GEN. STAT. § 143-215.115 et. seq. (2013). This thesis will discuss the North Carolina statute in detail below.

[138] N.D. ADMIN. CODE § 69-06-10-01 et seq. (2013). The North Dakota rules only apply to facilities generating 20 MW of electricity or less. § 69-06-10-01.

[139] OR. ADMIN. R. 345-024-0010 et seq. (2013).

[140] S.D. CODIFIED LAWS § 49-41B-1 et seq (Michie 2013); S.D. ADMIN. R 20:10:22:33.02 (2013).

[141] VT. STAT. ANN. tit. 30, § 248(o) (2013); VT. CODE R. 18-1 § 20 (2013).

Wisconsin.[142] Other states either deal with wind farm siting as a matter of local government jurisdiction, apply conventional electric generation site permitting authorities, or apply siting authorities applicable to renewable energy generally.[143]

Some states, like New York, require comprehensive environmental reviews similar to those executed by the federal government under the National Environmental Policy Act[144] (NEPA).[145] NEPA and its state equivalents require permitting agencies in certain circumstances to take a "hard look" at how proposed projects may affect wildlife, water quality, aesthetics, and other environmental concerns.[146]

The foregoing survey of permitting authorities pertains to geographic areas under the sovereign jurisdiction of the states. While the United States presently has no offshore wind generation capacity, many offshore projects are being financed, planned, or considered for permitting.[147] In the offshore context, the Submerged Lands Act of 1953[148] defines a coastal state's geographic jurisdiction to extend to a line three nautical

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[142] WIS. STAT. § 196.378(4g) (2013); WIS. ADMIN. CODE, PSC § 128.01 et seq. (2013).

[143] Salkin, *supra* note 117, at 103-04. The legislature of Alabama considered, but did not pass, a wind-specific siting bill in April 2014. Chris Marr, *Alabama Puts Strict Limits on Wind Farms in Two Counties but Passes No State Rules*, BLOOMBERG BNA DAILY ENVIRONMENTAL REPORT, April 7, 2014.

[144] 42 U.S.C. § 4321 (2012).

[145] Salkin, *supra* note 117, at 96.

[146] *Id*. at 96-97.

[147] Nat'l Renewable Energy Lab., *supra* note 103, at 6.

[148] 43 U.S.C. § 1301 et seq. (2012).

miles from the coast.[149] Wind turbines situated within these state territorial waters would be subject to state or local permitting as described above.[150] The Coastal Zone Management Act[151] (CZMA) provides that, even in federal waters seaward of the three-mile line, states with approved coastal zone management plans can require that federal permitting actions affecting the state's coastal zone be consistent with the state's planning efforts and regulations.[152] These consistency reviews will almost always come into play for offshore wind farms because, among other possible effects, the transmission lines by necessity will traverse the coastal state's jurisdictional waters.[153]

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[149] § 1312. States' sovereignty within the three-mile zone remains subject to federal preemption in the areas of "commerce, navigation, national defense, and international affairs . . . ." § 1314(a).

[150] Nat'l Renewable Energy Lab., *supra* note 103, at 128.

[151] 16 U.S.C. § 1451 et seq.

[152] § 1456(c). A detailed consideration of federal wind farm siting (where states' interests are not involved) is beyond the scope of this thesis.

[153] Adam Vann, *Wind Energy: Offshore Permitting*, *in* OFFSHORE WIND POWER: CHALLENGES, ECONOMICS AND BENEFITS, *supra* note 100, at 213, 215. Note that the siting of the transmission infrastructure may be subject to state permitting requirements independent of both the CZMA consistency review and the federal permitting for constructing the generation facility. *Id*.

The following section of this thesis will explain the ways in which the federal government can protect its interests in state wind siting actions, especially regarding the risks to aviation and military activities described earlier.

Federal Influence on State or Local Permitting of Wind Farm Siting

Even in areas where the state has sole jurisdiction to permit constructing a wind farm, a variety of federal agencies may also be involved.[154] For example, turbines erected on wetlands or in navigable waters may require a Clean Water Act permit from the U.S. Army Corps of Engineers (CoE).[155] Outside of permitting, several federal programs offer financial subsidies or tax credits for development of renewable energy sources.[156]

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[154] Salkin & Ostrow, *supra* note 10, at 1076-77.

[155] *Id*. at 1077. *See generally* 33 U.S.C. § 1344 (2012) and 33 C.F.R. pt. 323 (2013) (detailing CoE's program for permitting discharges of dredged or fill materials into U.S. waters). Other agencies that have limited preemption or review obligations regarding state wind farm permitting include DoE, FERC, the Bureau of Land Management, the National Park Service, the Forest Service, the Minerals Management Service, the Fish and Wildlife Service (FWS), the National Telecommunications and Information Administration, and the Environmental Protection Agency. Salkin, *supra* note 117, at 103; Salkin & Ostrow, *supra* note 10, at 1066.

[156] *Id*. at 1079-1080.

Regarding wind farms' effects on aviation, including physical obstruction and interference with radar, FAA is the de facto lead agency to voice the federal government's concerns.[157] In the Federal Aviation Act,[158] Congress required the Secretary of Transportation to assess any proposed construction or alteration of structures that could "result in an obstruction of the navigable airspace or an interference with air navigation facilities and equipment or the navigable airspace . . ."[159] The statute prescribes the following standards:

> [T]he Secretary shall conduct an aeronautical study to decide the extent of any adverse impact on the safe and efficient use of the airspace, facilities, or equipment. In conducting the study, the Secretary shall consider factors relevant to the efficient and effective use of the navigable airspace, including-
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> (A) the impact on arrival, departure, and en route procedures for aircraft operating under visual flight rules;
>
> (B) the impact on arrival, departure, and en route procedures for aircraft operating under instrument flight rules;

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[157] *Id*. at 1078.

[158] 49 U.S.C. § 1301 et seq. (2012).

[159] § 44718(b)(1).

(C) the impact on existing public-use airports and aeronautical facilities;

(D) the impact on planned public-use airports and aeronautical facilities; and

(E) the cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures.[160]

FAA implements these statutory requirements through its Obstruction Evaluation/ Airport Airspace Analysis (OE/AAA) program.[161] Title 14, part 77, of the Code of Federal Regulations, "Safe, Efficient Use, and Preservation of the Navigable Airspace" (part 77), sets forth the OE/AAA process.

Part 77 requires notification to FAA before constructing or altering any structure higher than 200 feet above ground level, regardless of location.[162] It also applies to lower structures if they are within certain horizontal distances of an airport runway and the

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[160] *Id*.

[161] *See generally* Fed. Aviation Admin., *Obstruction Evaluation / Airport Airspace Analysis (OE/AAA)*, https://oeaaa.faa.gov/oeaaa/external/portal.jsp (accessed Mar. 8, 2014) (providing an overview of the OE/AAA process).

[162] 14 C.F.R. § 77.9(a) (2014).

structure vertically intersects an imaginary graded slope from the runway.[163] Proponents of the construction or alteration (termed "sponsors" by FAA Form 7460-1, "Notice of Proposed Construction or Alteration"[164]) must submit the required notice to FAA no later than 45 days before commencing construction or applying for a permit, whichever comes first.[165]

The threshold determination FAA makes in the OE/AAA process is whether the structure in question would be an "obstruction to air navigation" within the meaning of the implementing regulation.[166] Chief among the applicable standards is whether the structure is 499 feet high or higher regardless of location—if it is, then it is an

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[163] § 77.9(b). At larger airports (with runways longer than 3,200 feet), the slope is 100 to 1, out to a distance of 20,000 feet horizontally from the runway. § 77.9(b)(1). So a tower one mile (5,280 feet) away from a large airport would trigger part 77's notice requirement if it was higher than 52.8 feet. Smaller airports have a steeper (therefore more lenient to proposed structures) slope—50 to 1, out to a distance of 10,000 feet. § 77.9(b)(2). At heliports, the slope is 25 to 1, out to 5,000 feet. § 77.9(b)(3).

[164] The form is available at FED. AVIATION ADMIN., *Notice of Proposed Construction or Alteration*, http://www.faa.gov/documentLibrary/media/Form/FAA%20Form%207460-1_2012.pdf (accessed Mar. 8, 2014).

[165] § 77.9(b).

[166] *See* § 77.17 (promulgating the standards by which FAA determines that structures are obstructions).

obstruction.[167] Lower heights apply to structures that are closer to airports.[168] FAA presumes obstructions to be "hazards to air navigation" (an OE/AAA term of art discussed in detail below) unless a later aeronautical study concludes otherwise.[169]

Even if a proposed project would not qualify as an obstruction due to its height, it may still require an aeronautical study if it "is found to have physical or electromagnetic radiation effect on the operation of air navigation facilities."[170] The term "air navigation facilities" is understood to include air traffic control radar systems.[171]

The aeronautical study's purpose "is to determine whether the aeronautical effects of the specific proposal and, where appropriate, the cumulative impact resulting from the proposed construction or alteration when combined with the effects of other existing or proposed structures, would constitute a hazard to air navigation."[172] A study can be

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[167] § 77.17(a)(1).

[168] § 77.17(a)(2)-(5).

[169] § 77.15(b).

[170] FED AVIATION ADMIN., U.S. DEP'T OF TRANSP., ORDER JO 7400.2J, PROCEDURES FOR HANDLING AIRSPACE MATTERS ¶ 6-3-3 (2012). *See also Town of Barnstable, Mass. v. Fed. Aviation Admin.*, 740 F.3d 681, 689 (D.C. Cir. 2014) (affirming FAA's internal policy treating electromagnetic radiation effect as a coequal threshold factor along with the obstruction determination).

[171] *See id.* (equating "radar interference" with electromagnetic radiation effect).

[172] § 77.25(b).

[173] § 77.25(c).

initiated at the sponsor's request or by FAA's unilateral decision.[173] FAA evaluates the following factors in any given study:

> (1) The impact on arrival, departure, and en route procedures for aircraft operating under visual flight rules;
>
> (2) The impact on arrival, departure, and en route procedures for aircraft operating under instrument flight rules;
>
> (3) The impact on existing and planned public use airports;
>
> (4) Airport traffic capacity of existing public use airports and public use airport development plans received before the issuance of the final determination;
>
> (5) Minimum obstacle clearance altitudes, minimum instrument flight rules altitudes, approved or planned instrument approach procedures, and departure procedures;
>
> *(6) The potential effect on ATC radar, direction finders, ATC tower line-of-sight visibility, and physical or electromagnetic effects on air navigation, communication facilities, and other surveillance systems*;
>
> (7) The aeronautical effects resulting from the cumulative impact of a proposed construction or alteration

> of a structure when combined with the effects of other existing or proposed structures.[174]

The process provides an opportunity for public comment during the aeronautical study.[175]

Based on its assessment of the above factors, FAA will either issue a "Determination of Hazard to Air Navigation" or a "Determination of No Hazard to Air Navigation."[176] FAA may premise a "No-Hazard" determination on the study's outright conclusion that the structure will not have a substantial impact on aviation, or it may subject the determination to conditions like marking or lighting, supplemental notice obligations, or other mitigating measures.[177]

Sponsors or other interested parties may appeal FAA's determination by submitting a petition for discretionary review within 30 days.[178] FAA may deny the

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[174] § 77.29(a) (emphasis added).

[175] R. Patrick Phillips, Experimental Aircraft Ass'n, *Oh No! Not Another Tower!* (May 1999), http://members.eaa.org/home/govt/legal/articles/Oh%20No!%20Not%20Another%20Tower!.asp.

[176] § 77.31(c)-(d). *See also* FED AVIATION ADMIN., supra note 170, chapter 7 (laying out FAA's determination procedures in greater detail than does part 77).

[177] § 77.31(d).

[178] § 77.37(a). To be eligible to submit a petition for discretionary review, non-sponsoring parties must have "provided a substantive aeronautical comment on a proposal in an aeronautical study" or have such a comment without having had an opportunity to submit it. *Id*.

petition for review altogether,[179] or if it grants review, may "revise, affirm, or reverse" its original determination after further study.[180]

A Determination of Hazard, in and of itself, does not preclude the contemplated construction or alteration, at least as a matter of federal law.[181] But part 77 requires FAA to "advise all known interested persons" of the aeronautical study results.[182] FAA's determinations are exceptionally persuasive and have a high likelihood of being dispositive factors in other agencies' deliberations on permitting.[183] Those other agencies —federal, state, or local—may deny construction permits or operating licenses based on a Determination of Hazard to Air Navigation or a sponsor's failure or refusal to comply

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[179] § 77.37(b).

[180] § 77.37(c).

[181] Phillips, *supra* note 175, http://members.eaa.org/home/govt/legal/articles/Oh%20No!%20Not%20Another%20Tower!.asp.

[182] § 77.31(a).

[183] *See Town of Barnstable, Mass. v. Fed. Aviation Admin.*, 659 F.3d 28, 34 (D.C. Cir. 2011) (finding it likely that the U.S. Department of the Interior would revoke or modify a federal wind lease for the Cape Wind project in Nantucket Sound if FAA had issued a Determination of Hazard to Air Navigation). The court noted that "Interior would take an FAA finding of hazard very, very seriously." *Id*. at 32.

with any conditions placed on a Determination of No Hazard.[184] Such denial may be required by local or state law, or may be discretionary.[185] If a structure is built or altered despite a Determination of Hazard, FAA could alter or eliminate air traffic patterns and individual airport's approach or departure procedures in light of the proposed hazards, which in turn could increase travel costs or otherwise impede airport users' ability to travel to or from the local airport.[186]

In 2011, Congress amended the Federal Aviation Act to require that FAA give voice in the OE/AAA aeronautical study process to DoD and the U.S. Department of Homeland Security (DHS).[187] One year earlier, the Ike Skelton National Defense

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[184] Phillips, *supra* note 175, http://members.eaa.org/home/govt/legal/articles/Oh%20No!%20Not%20Another%20Tower!.asp. For example, the Federal Communications Commission will not issue an operating permit if FAA has determined that a broadcast tower is a hazard to air navigation. *Id*.

[185] *See, e.g.,* N.C. GEN. STAT. § 143-215.120(c) (2013) (providing that "[n]o permit for a wind energy facility or wind energy facility expansion shall become effective until the Department [that may grant the permit] has received and reviewed the "Determination of No Hazard to Air Navigation" issued by [FAA] for the facility").

[186] *Id*.

[187] National Defense Authorization Act for Fiscal Year 2012, Pub. L. No. 112-81, § 332, 125 Stat. 1298, 1369 (codified as amended at 49 U.S.C. § 44718(e)). Note that DHS is the parent cabinet department of the U.S. Coast Guard, the only branch of the U.S. armed forces not organizationally located within DoD. 14 U.S.C. § 3(a) (2012).

Authorization Act for Fiscal Year 2011[188] (NDAA 2011) required DoD "to ensure that the robust development of renewable energy sources and the increased resiliency of the commercial electrical grid may move forward in the United States, while minimizing or mitigating any adverse impacts on military operations and readiness."[189] This legislation helped refine the role of the DoD Siting Clearinghouse (the Clearinghouse) in the Office of the Deputy Under Secretary of Defense for Installations and Environment (DUSD-I&E).[190] The Clearinghouse's mission is to "[p]rotect DoD mission capabilities from incompatible development by collaborating with DoD Components and external stakeholders to prevent, minimize, or mitigate adverse impacts on military operations, readiness, and testing."[191]

DoD implemented the relevant NDAA 2011 requirements in title 14, part 211, of the Code of Federal Regulations, "Mission Compatibility Evaluation Process" (part 211). Section 211.4(b) of that part ties the Clearinghouse's mission directly to FAA's OE/AAA program: "The participation of the DoD in the process of the [FAA] conducted pursuant

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[188] Pub. L. No. 111-383, 124 Stat. 1298.

[189] § 358, 124 Stat. at 4198.

[190] § 358(b)(1)(B), 124 Stat. at 4198. The Clearinghouse was actually established in 2010 to provide "a 'one-stop-shop' for comprehensive, expedited evaluation of energy projects and their potential effect on DoD operations." Dep't of Def. Siting Clearinghouse, U.S. Dep't of Defense, *DoD Siting Clearinghouse*, http://www.acq.osd.mil/dodsc/ (accessed Mar. 9, 2014).

[191] *Id*.

to 49 U.S.C. [§] 44718 shall be conducted in accordance with this part. *No other process shall be used by a DoD Component*."[192]

NDAA 2011 required the Secretary of Defense to designate a senior official to serve as executive agent and to establish a "clearinghouse" for OE/AAA review matters.[193] Part 211 assigns this senior official responsibility to the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD-AT&L).[194] The Clearinghouse was established within the Office of the Deputy Under Secretary of Defense for Installations and Environment.[195]

Where the OE/AAA process is designed to determine whether a project poses a hazard to air navigation, Clearinghouse functions and processes hinge upon the

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[192] Emphasis added.

[193] § 358(b)(1), 124 Stat. at 4198.

[194] 32 C.F.R. § 211.5(b) (2013).

[195] § 211.5(d).

determination whether the project poses "an unacceptable risk to the national security of the United States."[196] Part 211 defines this term as follows:

> The construction, alteration, establishment, or expansion, or the proposed construction, alteration, establishment, or expansion, of a structure or sanitary landfill that would:
>
> (1) Endanger safety in air commerce, related to the activities of the DoD.
>
> (2) Interfere with the efficient use and preservation of the navigable airspace and of airport traffic capacity at public-use airports, related to the activities of the DoD.
>
> (3) Significantly impair or degrade the capability of the DoD to conduct training, research, development,

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[196] NDAA 2011 § 358(e)(2). *See also* 32 C.F.R. § 211.1(a) (stating that the purpose of part 211's procedures is "to provide [a] formal review of projects for which applications are filed with the Secretary of Transportation under 49 U.S.C. [§] 44718, to determine if they pose an unacceptable risk to the national security of the United States"); OFFICE OF THE UNDER SEC'Y OF DEF. FOR ACQUISITION, TECH., & LOGISTICS, U.S. DEP'T OF DEF., REPORT TO CONGRESS ON UNACCEPTABLE RISK TO NATIONAL SECURITY FROM COMMERCIAL ENERGY PROJECTS (2013), *available at* http://www.acq.osd.mil/dodsc/library/RTC%20UR%20Final.pdf (summarizing DoD's implementation of NDAA 2011's mission compatibility evaluation requirements).

testing, and evaluation, and operations or to maintain military readiness.[197]

The first two factors align very closely with the traditional OE/AAA analysis as described above.[198] The third is far more expansive, to capture virtually all domestic military activity.[199]

Another key concept in the Clearinghouse's procedures is identifying mitigating measures.[200] Sponsors of projects can modify their proposals or change the proposed locations to remedy any adverse impacts on DoD activities.[201] Mitigation is not limited to actions the sponsor might undertake; DoD itself must consider changing its activities, facilities, or equipment to accommodate the proposed project.[202] Sponsors can elect to contribute financially to DoD's efforts in this regard.[203]

The Clearinghouse will assess proposed projects in one of two contexts. A "formal review" is triggered by the Clearinghouse's receipt from FAA of a properly filed

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[197] 32 C.F.R. § 211.3(l).

[198] *Supra* text accompanying notes 158-87.

[199] This is not to suggest that any impact whatsoever on any DoD activity will trigger an unacceptable risk finding. Recall that the part 211 definition requires a *significant* impairment or degradation. § 211.3(l)(3).

[200] NDAA 2011 § 358(e)(1). *See also* 32 C.F.R. § 211.9 (discussing various types of mitigation).

[201] § 211.9(b).

[202] § 211.9(a).

[203] § 211.9(b)(3).

OE/AAA application.[204] Upon receipt, the Clearinghouse will provide the application to any service branch or other DoD component that may have an interest.[205] Those components then have twenty days to comment on or make recommendations regarding the application.[206]

Within thirty days of initial receipt of the application from FAA, the Clearinghouse must either report to FAA that the project "will not have an adverse impact on military operations and readiness,"[207] or if it may have such an impact, contact the sponsor directly with an offer to discuss mitigation strategies.[208] If the DoD lead

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[204] § 211.6(a).

[205] § 211.6(a)(1).

[206] § 211.6(a)(2).

[207] § 211.6(a)(3)(i).

[208] § 211.6(a)(3)(ii)(A). The Clearinghouse will designate an appropriate DoD component to take the lead on mitigation negotiations. § 211.6(a)(3)(ii)(B). It will also invite DHS and FAA to participate. § 211.6(b).

component and sponsor reach an agreement on mitigation, the sponsor must then amend his or her OE/AAA application accordingly.[209]

If there is no agreement, or if the sponsor refuses to participate in mitigation discussions at the outset, the Clearinghouse will consider the comments and recommendations of the interested DoD components and make a recommendation up the

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[209] § 211.6(b)(1)(ii). The Clearinghouse publishes significant mitigation agreements on its web site. *See, e.g.,* U.S. DEP'T OF DEF., U.S. DEP'T OF THE NAVY, & TEX. WIND GROUP, MEMORANDUM OF AGREEMENT ON RIVIERA I WIND TURBINE FARM, KINGSVILLE, TX (2012), *available at* http://greenfleet.dodlive.mil/files/2012/04/TWG-MOA.pdf (documenting an agreement regarding the Riviera I Wind Turbine Farm near Naval Air Station Kingsville, Texas); U.S. DEP'T OF DEF., U.S. DEP'T OF THE NAVY, E.ON CLIMATE & RENEWABLES, N. AM., & PETRONILLA WIND FARM, LLC, DEVELOPMENT OF A WIND TURBINE FARM IN NUECES COUNTY, TEXAS (2012), *available at* http://greenfleet.dodlive.mil/files/2012/11/E.ON-NAS-Kingsville-Final-MOA-with-Signatures.pdf (documenting an agreement regarding the Petronilla Wind project near Naval Air Station Corpus Christi, Texas); INVENERGY WIND DEV., LLC, U.S. DEP'T OF DEF., & U.S. AIR FORCE, PANTEGO WIND ENERGY PROJECT AGREEMENT (2014), *available at* http://www.acq.osd.mil/dodsc/library/Final%20Pantego%20agreement_6JAN2014%20As%20Amended%20for%20Public%20View.pdf (documenting an agreement regarding the Pantego Wind Energy Project near Seymour Johnson Air Force Base, North Carolina).

chain of command whether the project poses an unacceptable risk to national security.[210] The first stop is with USD-AT&L, in his or her capacity as the "senior official" within the meaning of NDAA 2011.[211]

The senior official may either concur or not concur with the Clearinghouse's recommendation, and in turn will forward the application to the "senior officer" (not to be confused with "senior official") who is ultimately authorized to convey DoD's position to the Secretary of Transportation.[212] The Deputy Secretary of Defense acts as senior officer for this purpose.[213] He or she will articulate to the Secretary of Transportation whether the proposed project poses an unacceptable risk to national security, and, if it does, on what grounds DoD reached that conclusion.[214] Formal determinations of unacceptable risk to national security by the senior officer require notification to Congress.[215]

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[210] § 211.6.

[211] *Id*.

[212] *Id*. *See also* NDAA 2011, Pub. L. No. 111-383, § 358(e)(4), 124 Stat. at 4200-01 (limiting delegation of "senior officer" status from the Secretary of Defense to the following three positions: Deputy Secretary of Defense; USD-AT&L; and Principal Deputy USD-AT&L).

[213] 32 C.F.R. § 211.5(a).

[214] § 211.6.

[215] NDAA 2011 § 358(e)(3).

Besides the "formal review" procedure just described, the Clearinghouse can also informally review a proposal at the request of the project's proponent.[216] When a proponent submits a request for an informal review to the Clearinghouse, the Clearinghouse will in turn distribute the request to the service branches or other DoD components that may have an interest.[217] Those components will review, comment, and make recommendations.[218]

After reviewing those comments and recommendations, the Clearinghouse may determine that the proposal will not adversely impact DoD activities.[219] If so, the Clearinghouse will relay that determination to the requester with that caveats that the

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[216] 32 C.F.R. § 211.7. *See also* NDAA 2011 § 358(c)(3), 124 Stat. at 4199 (requiring DoD to "establish procedures for . . . the coordinated consideration of and response to a request for a review received from State and local officials or the developer of a renewable energy development or other energy project, . . . and ensure a coordinated Department response . . . ."). The requester could also be a state or local government. 32 C.F.R. § 211.7(b)(2)(ii)(B).

[217] § 211.7(b). If the request is made to a DoD organization other than the Clearinghouse (e.g., a nearby military installation), part 211 requires the DoD component involved to forward the request to the Clearinghouse, unless it has been previously assigned by the Clearinghouse to conduct mitigation discussions regarding the project at issue. § 211.8.

[218] § 211.7(b)(1).

[219] § 211.7(b)(2)(i).

informal determination does not substitute for a completed OE/AAA determination by FAA and that it is not binding on DoD.[220]

If the Clearinghouse determines that the proposed project *would* have an adverse impact, it will invite the requester to participate in mitigation discussions.[221]

In 2012, DoD reported to Congress that the Clearinghouse had reviewed a backlog of 506 renewable energy projects, finding no adverse impact in 486 and entering mitigation discussions or further study in the remaining 20, but ultimately not determining that any were unacceptable risks to national security.[222] Additionally, the Clearinghouse conducted formal reviews of 1,769 OE/AAA applications.[223] Of those, 1,730 were determined "to have little or no impact on" DoD activities.[224] The remainder, as of the date of DoD's most recent report to Congress, were subject to further

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[220] *Id*.

[221] § 211.7(b)(2)(ii)(A). If the requester is a state or local government, the Clearinghouse will simply inform the requester of the determination without initiating mitigation discussions. § 211.7(b)(2)(ii)(B).

[222] DEP'T OF DEF. SITING CLEARINGHOUSE, U.S. DEP'T OF DEFENSE, ANNUAL REPORT TO CONGRESS 2 (2012), *available at* http://www.acq.osd.mil/dodsc/library/fy2012-rpt-to-congress.pdf.

[223] *Id*. at 1.

[224] *Id*. DoD reported to Congress that those 1,730 projects totaled approximately 38 gigawatts of renewable power. *Id*.

analysis.[225] Again, DoD reported no unacceptable risks to national security, but ten projects were subject to mitigation negotiations.[226]

Outside of the OE/AAA and Clearinghouse processes, DoD has at times sought to collaborate with state officials in the planning and site evaluation for renewable energy projects. For example, in 2011 DoD entered a memorandum of understanding with the California Department of Fish and Game, California Energy Commission, U.S. Bureau of Land Management, and U.S. Fish and Wildlife Service to participate in California's Renewable Energy Action Team and Desert Renewable Energy Conservation Plan.[227] The parties agreed to

> [w]ork together on the development of additional renewable energy resources in California's Mojave and Colorado Desert Regions, including identifying, as far in advance as practicable, those geographic areas and technical and environmental features that merit heightened

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[225] *Id*.

[226] *Id*.

[227] CAL. DEP'T OF FISH & GAME, CAL. ENERGY COMM'N, U.S. BUREAU OF LAND MGMT., U.S. FISH & WILDLIFE SERV., & U.S. DEP'T OF DEF., MEMORANDUM OF UNDERSTANDING REGARDING PARTICIPATION AND ENGAGEMENT IN THE CALIFORNIA RENEWABLE ENERGY ACTION TEAM AND THE DESERT RENEWABLE ENERGY CONSERVATION PLAN (2011), *available at* http://www.drecp.org/documents/docs/Renewable_Energy_Action_Team_and_Dept_of_Defense_MOU_Dec_2011.pdf.

> consideration so that renewable energy project and transmission line development is consistent with and does not impede DoD's military mission.[228]

With one exception, the state siting authorities, wind-specific or otherwise, discussed in the previous section do not expressly address the consideration of military equities. The upcoming section will examine the sole exception.

North Carolina's Wind Energy Facility Permitting Statute

On March 28, 2013, North Carolina state representative John Bell introduced House Bill 484 (H.B. 484), entitled "Permitting of Wind Energy Facilities" to the state General Assembly.[229] H.B. 484 would establish procedures and requirements for any person to obtain a permit from the state Department of Environment and Natural Resources (DENR) to construct a wind energy facility in the state.[230] Among its

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[228] *Id*. at 4.

[229] H.B. 484, 2013 Gen. Assem. Sess. (N.C. 2013), http://www.ncga.state.nc.us/Applications/BillLookUp/LoadBillDocument.aspx?SessionCode=2013&DocNum=2436&SeqNum=0. *See also* nchouse117.com - Legislative News from Representative Chuck McGrady, *Preserving military readiness* (May 1, 2013), http://nchouse117.com/preserving-military-readiness/ (announcing H.B. 484's passage in the state house).

[230] N.C. H.B. 484.

comprehensive requirements, the bill would specifically require identifying potential impacts to military activities and engagement with nearby military base officials during the site evaluation process.[231]

On May 1, 2013, the state House of Representatives passed H.B. 484 with 112 votes in favor and only 2 opposed.[232] Bell touted the passage as "a huge win for protecting our military's low-altitude training routes, bombing practice ranges and other critical military interests in North Carolina . . . ."[233] The state Senate passed the bill unanimously with minor amendments on May 14,[234] and the House approved the amended bill the next day with 111 in favor and just one opposed.[235] Governor Pat

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[231] *Id*.

[232] N.C. Gen. Assem., *House of Representatives Roll-Call Transcript* (May 1, 2013), http://www.ncga.state.nc.us/gascripts/voteHistory/RollCallVoteTranscript.pl?sSession=2013&sChamber=H&RCS=424.

[233] nchouse117.com - Legislative News from Representative Chuck McGrady, *supra* note 229, http://nchouse117.com/preserving-military-readiness/.

[234] N.C. Gen. Assem., *Senate Roll-Call Transcript* (May 14, 2013), http://www.ncga.state.nc.us/gascripts/voteHistory/RollCallVoteTranscript.pl?sSession=2013&sChamber=S&RCS=345.

[235] N.C. Gen. Assem., *House of Representatives Roll-Call Transcript* (May 15, 2013), http://www.ncga.state.nc.us/gascripts/voteHistory/RollCallVoteTranscript.pl?sSession=2013&sChamber=H&RCS=760.

McCrory signed the bill into law on May 17.[236] The law is codified in chapter 143, article 21C, of the North Carolina Statutes, "Permitting of Wind Energy Facilities" (article 21C).[237]

Article 21C provides that "[n]o person shall undertake construction, operation, or expansion activities associated with a wind energy facility in this State without first obtaining a permit from [DENR]."[238] Six months before even applying for such a permit, however, the prospective applicant must request a "preapplication site evaluation meeting" through DENR.[239]

In the "preapplication package," the applicant must describe the proposed facility or expansion, provide a construction and operation timeline, list all agencies (local, state and federal) from which additional permits will be required, describe expected wildlife impacts, and disclose "any known potential impacts of the proposed wind energy project location on civil air navigation or military air navigation routes, air traffic control areas,

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[236] Andrew M. Ballard, North Carolina Governor Signs Bill on Siting, *Operating Wind Energy Facilities*, BLOOMBERG BNA ENERGY AND CLIMATE REPORT, May 17, 2013.

[237] N.C. GEN. STAT. § 143-215.115 et. seq. (2013).

[238] § 143-215.116. The term "wind energy facility" is defined as "the turbines, accessory buildings, transmission facilities, and any other equipment necessary for the operation of the facility that cumulatively, with any other wind energy facility whose turbines are located within one-half mile of one another, have a rated capacity of one megawatt or more of energy." § 143-215.115(2).

[239] § 143-215.117(a).

military training routes, special-use air space, radar, or other potentially affected military operations."[240]

DENR must schedule the meeting no later than four months before the applicant files the permit application.[241] Article 21C further requires DENR to invite potential outside stakeholders to participate in the preapplication meeting, including "the commanding military officer or the commanding military officer's designee of any potentially affected major military installation . . . ."[242] The purpose of the preapplication meeting is to determine if the project will pose a threat to civil or military aviation, other military activities, or natural resources.[243]

Article 21C requires yet another advance meeting before submitting a perfected application for a permit—this time a scoping meeting between the prospective applicant

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[240] § 143-215.117(b).

[241] § 143-215.117(a).

[242] § 143-215.117(c). The statute also lists CoE, FWS, the state Wildlife Resources Commission (WRC), "any other party that the Department deems relevant." *Id*. Recall that 32 C.F.R. § 211.8 (2013) requires DoD components to forward such matters to the Clearinghouse unless they have been previously designated by the Clearinghouse to engage in discussions on the matter in question. *Supra* note 217.

[243] N.C. GEN. STAT. § 143-215.117(a) (2013).

[244] § 143-215.118(a).

and DENR.[244] Again, DENR must invite other participants, including FAA and the military representatives described above.[245]

After the site evaluation and scoping meetings, the applicant may then file his or her application for a permit to construct or expand the wind facility in question.[246] Among its many required procedural and substantive requirements,[247] article 21C expressly requires the following items relevant to military installations and operations:

> (5) A description of civil air navigation or military air navigation routes, air traffic control areas, military training routes, special-use air space, radar, or other military operations that may be affected by the construction or operation of the proposed wind energy facility or proposed wind energy facility expansion.

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[245] § 143-215.118(b). The statute also lists WRC, FWS, and governments of affected municipalities. *Id*.

[246] § 143-215.119.

[247] These requirements include a project description with a map, a deed or lease reflecting the legal right to develop the facility, identities of adjacent landowners, a noise impact study, a shadow flicker study, a natural resource a wildlife impact study, a decommissioning plan, a prima facie showing of the permit approval criteria in section 143-215.120 (discussed *infra* at the text accompanying notes 255-58), and a $3,500 application fee. § 143-215.119(a).

> (6) Documentation that addresses any potential adverse impact on military operations and readiness as identified by the . . . Clearinghouse pursuant to [part 211] . . . and any mitigation actions agreed to by the applicant.
>
> (7) Documentation that the applicant has either (i) submitted [FAA] Form 7460-1 for the turbines associated with the proposed wind energy facility or proposed wind energy facility expansion or (ii) initiated an informal review by the . . . Clearinghouse of the proposed wind energy facility or proposed wind energy facility expansion. If the applicant has submitted [FAA] Form 7460-1 in order to fulfill the requirements of this subdivision, the applicant shall provide any determination reached by [FAA] at the time the application is submitted to [DENR]. If [FAA] has not made a determination at the time the application is submitted to [DENR], the application shall include a description of the status of the applicant's engagement with [FAA] *and the . . . Clearinghouse*.[248]

So to apply for a permit, a wind farm developer must have either obtained a *completed* OE/AAA determination from FAA (in which case DoD would have provided input to FAA through part 211's Clearinghouse procedures) or must have initiated an informal

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[248] *Id*. (emphasis added).

review request to the Clearinghouse (note the statutory language above requiring the applicant to "include a description of the status of the applicant's engagement with [the] Clearinghouse" if the OE/AAA determination is not complete).[249]

The statute requires DENR then to notify military officials at the potentially affected bases as well as the appropriate local government officials.[250] Along with the notification, DENR must request feedback on potential adverse impacts.[251] Upon request from these parties, DENR will provide the permit application with all supplementary materials in its entirety, except for confidential or trade secret information.[252]

Before adjudicating the permit application and within 75 days of its submission, DENR must hold public hearings in every county in which the proposed wind farm is to

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[249] *Id*.

[250] § 143-215.119(d).

[251] *Id*. Regarding the information DENR requests from military officials, the statute calls for "technical information related to any adverse impact on the installation's operations, training, or mission, including military air navigation routes, air traffic control areas, military training routes, special-use air space, radar or other military operations that may be affected." § 143-215.119(d)(2).

[252] § 143-215.119(e). *See also* § 143-215.124 (limiting disclosure of confidential information and trade secrets).

[253] § 143-215.119(f).

be situated.[253] Besides the standard public notice requirement, DENR must notify the local military officials of the hearing.[254]

Article 21C provides extensive approval criteria for wind farm permits.[255] DENR must approve the permit unless it finds that the proposed project would adversely impact the environment (including wildlife and aesthetic considerations associated with state or national parks), obstruct marine navigation, violate local zoning requirements, or violate any other federal or state law or local ordinance.[256] Importantly, DENR may not approve a wind permit if it finds that the project "would encroach upon or would otherwise have a significant adverse impact on the mission, training, or operations of any major military installation or branch of military in North Carolina and result in a detriment to continued military presence in the State."[257] The statute requires DENR to "consider whether the proposed wind energy facility or proposed wind energy facility expansion would cause interference with air navigation routes, air traffic control areas, military training routes, or radar based on information submitted by the applicant under [the permit application

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[254] § 143-215.119(f)(3). DENR must also separately notify the North Carolina Utilities Commission, the state Attorney General, and affected municipal governments. § 143-215.119.

[255] § 143-215.120(a).

[256] *Id*.

[257] § 143-215.120(a)(2).

requirements quoted above], and any information received" from military officials in response to the request for adverse impact assessment described above.[258]

DENR must adjudicate permit applications within three months of submission or within one month of receiving FAA's OE/AAA determination or other follow-up information that DENR may have requested from any party, whichever is later.[259] The statute expressly requires a "Determination of No Hazard to Air Navigation" from FAA; no permit may become effective in the absence of such a determination.[260]

Consider a hypothetical scenario in which DoD, after following part 211's formal review process,[261] takes the position that a proposed wind project poses an unacceptable risk to national security (without agreement for or possibility of mitigation) and conveys that position to the Secretary of Transportation, but FAA issues a Determination of No Hazard despite DoD's position. There is no article 21C prohibition on a permit's issuance or effectiveness if DoD makes a determination of unacceptable risk.[262] But in the face of such a determination, DENR would be hard pressed to permit the proposed facility given the law's prohibition on permit approval for projects that "would encroach

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[258] *Id*.

[259] § 143-215.120(b).

[260] § 143-215.120(c).

[261] *See supra* notes 204-15 and accompanying text (describing the formal review procedures).

[262] § 143-215.115-126.

upon or would otherwise have a significant adverse impact on the mission, training, or operations of any major military installation . . . ."[263]

The statute thus grants DoD, a federal agency, what might be characterized as *soft veto*[264] authority over an ostensibly state-level decision-making process. Under part 211's requirement that DoD components forward to the Clearinghouse inquiries regarding mission compatibility with proposed renewable energy projects,[265] all DENR engagement with local military officials described above should implicate the Clearinghouse and, at a minimum, part 211's informal review process.[266] Part 211 provides for either informal engagement or a formal determination intended for

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[263] § 143-215.120(a)(2). Further, in the coastal zone context, DENR's administrative rules mandate that "the siting of energy facilities and related structures" shall avoid "military air space, training or target area and transit lanes . . . ." N.C. ADMIN. CODE tit. 15A, r. 7M.0403(f)(10) (Feb. 2014).

[264] *See supra* note 35 (explaining the author's use of the term "soft veto").

[265] 32 C.F.R. § 211.8. (2013).

[266] If the applicant has already submitted an FAA Form 7460-1, initiating the OE/AAA process, then the formal review procedures would apply. *See supra* notes 204-15 and accompanying text (explaining the formal review rules and process). Recall also that, in the context of military review of OE/AAA applications, part 211 admonishes, "[n]o other process shall be used by a DoD Component." § 211.4(b).

[267] *See supra* notes 196-221 and accompanying text (surveying the part 211 processes).

consideration by the Secretary of Transportation.[267] It is not readily apparent whether either NDAA 2011 or part 211 contemplates DoD executing such a soft veto.

North Carolina is the first jurisdiction at any level to expressly mandate direct engagement with military stakeholders in the course of wind facility permitting. Keeping that novelty in mind, the next two sections of this thesis will discuss article 21C's federalism and authority implications from the state and federal perspectives, beginning with an analysis of the advantages and disadvantages North Carolina accrues or incurs by essentially making wind farm permits contingent upon DoD's acquiescence.

A Worthwhile Concession of State Authority?

North Carolina's unsolicited deference to DoD in wind farm permitting—a function traditionally reserved to state discretion—reflects the depth and importance of the state's relationship with the military installations situated there.[268] The state is home

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[268] *See generally* Pat McCrory, JDNews.com, *Keeping military strong will keep North Carolina strong* (Dec. 19, 2013), http://www.jdnews.com/news/columns/keeping-military-strong-will-keep-north-carolina-strong-1.251804?ot=hmg.PrintPageLayout.ot&print=nophoto (expressing state governor's appreciation for North Carolina's military bases and resident retirees and affirming his intent "to ensure that the military remains a vital part of [North Carolina's] culture, economy, and . . . future").

to six bases servicing all five branches of the U.S. armed forces.[269] According to Governor McCrory, those facilities bring $48 billion and 540,000 jobs to the state's economy.[270]

In this context, it is no surprise that H.B. 484 passed both houses in the General Assembly nearly unanimously.[271] When the bill passed the state House of Representatives, its sponsor Bell declared, "[this] vote ensures that North Carolina stays the most military-friendly state in the nation."[272] One month later, the state enacted the Military Lands Protection Act of 2013 (MLPA).[273] This statute, which passed both

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[269] NC.gov, *Military*, http://www.nc.gov/government/military.aspx (accessed Mar. 10, 2014). The state is also home to several Coast Guard facilities. U.S. Coast Guard, U.S. Dep't of Homeland Sec., *Sector North Carolina - Sector Units*, http://www.uscg.mil/d5/sectNorthCarolina/other_nc_units.asp (accessed Mar. 10, 2014).

[270] McCrory, *supra* note 268, http://www.jdnews.com/news/columns/keeping-military-strong-will-keep-north-carolina-strong-1.251804?ot=hmg.PrintPageLayout.ot&print=nophoto. This represents ten percent of the state's economy. *Id*.

[271] *See supra* notes 229-37 and accompanying text (summarizing H.B. 484's legislative history).

[272] nchouse117.com - Legislative News from Representative Chuck McGrady, *supra* note 229, http://nchouse117.com/preserving-military-readiness/.

[273] 2013 N.C. Sess. Laws 206 (codified at N.C. GEN. STAT. § 143-151.70 et. seq. (2013)).

houses unanimously,[274] expresses the finding that "North Carolina has a vested economic interest in preserving, maintaining, and sustaining land uses that are compatible with military activities at major installations."[275] MLPA effectively bars local governments from permitting any structure over 200 feet high to be erected within five miles of a military base if it "would encroach upon or otherwise interfere with the mission, training, or operations of any major military installation in North Carolina *and result in a detriment to continued military presence in the State*."[276]

But what about North Carolina's interest in preserving, maintaining, and sustaining its unpreempted authority—as a sovereign state—to site electricity generation facilities? The concept of federalism and "states' rights" is subject to a debate as old as

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[274] N.C. Gen. Assem., *House Bill 433 Information/History (2013-2014 Session)*, http://www.ncga.state.nc.us/gascripts/BillLookUp/BillLookUp.pl?Session=2013&BillID=H433 (last modified June 26, 2013).

[275] § 143-151.72.

[276] § 143-151.75 (emphasis added). Like article 21C, MLPA also requires procedural engagement with local military authorities. § 143-151.75(c). Because they are treated comprehensively in article 21C, wind energy facilities are exempt from MLPA. § 143-151.74(c). As this thesis pertains to wind farm permitting in particular, in-depth analysis of MLPA is beyond the scope of this thesis. It is mentioned here simply to emphasize the General Assembly's keen interest in maintaining the U.S. military presence in North Carolina.

the U.S. Constitution, if not older.[277] James Madison opined that federal powers would be inclined to defer to state interests:

> The prepossessions, which the members themselves will carry into the federal government, will generally be favorable to the States; whilst it will rarely happen, that the members of the State governments will carry into the public councils a bias in favor of the general government. A local spirit will infallibly prevail much more in the members of Congress, than a national spirit will prevail in the legislatures of the particular States. Every one knows that a great proportion of the errors committed by the State legislatures proceeds from the disposition of the members to sacrifice the comprehensive and permanent interest of the State, to the particular and separate views of the counties or districts in which they reside. And if they do not sufficiently enlarge their policy to embrace the collective welfare of their particular State, how can it be imagined that they will make the aggregate prosperity of the Union, and the dignity and respectability of its

[277] SOTIRIOS A. BARBER, THE FALLACIES OF STATES' RIGHTS 1 (2013).

> government, the objects of their affections and consultations?[278]

On its face, article 21C seems to represent just the sort of disposition to federal interest that Madison posited "will rarely happen."[279] Of course, given the obvious economic considerations described above, it would be disingenuous to characterize article 21C's wind farm permitting regime, even given its deference to federal authority, as intended to effectuate "the aggregate prosperity of the Union."[280] But irrespective of intent, the effect is to diminish, to some extent, the state's control over wind farm siting. In doing so, North Carolina has not only lessened its power to influence where wind facilities are located, it has also lessened its ability to choose wind as an energy resource over conventional fuels or renewable sources not subject to the consultation requirement.[281]

North Carolina is certainly not the only state with interests in both wind power and military presence. Table A lists the top five wind-energy-producing states.

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[278] THE FEDERALIST NO. 46.

[279] *Id*.

[280] *Id*.

[281] *See* Stein, *supra* note 123, at 219 (explaining that "the authority to determine whether to approve construction of a new electricity generation facility . . . necessarily entails an assessment of the resources used by the facility to generate electricity, as well as determinations about location").

Rank	State	Installed wind power capacity (in MW)	Major military installations
1	Texas	12,355	11
2	California	5,830	19
3	Iowa	5,178	0
4	Illinois	3,568	2
5	Oregon	3,153	0
		. . .	
40	North Carolina	0	6

Table A - Top five wind-energy-producing states (and North Carolina)[282]

Three of the top five states have military bases within their state lines. The top two, Texas and California, each host a significantly higher number of bases than North Carolina's six. Texas and California rely heavily on military presence just as does North

[282] AM. WIND ENERGY ASS'N, AWEA U.S. WIND INDUSTRY FOURTH QUARTER 2013 MARKET REPORT 6 (Jan. 30, 2014) (on file with author). *See also* U.S. Dep't of Def., *MilitaryINSTALLATIONS*, http://www.militaryinstallations.dod.mil (accessed Mar. 10, 2014) (providing a search tool to view military installations in each state).

Carolina.[283] Yet none of the top five states have wind-specific statutory or regulatory siting authority, let alone military consultation requirements like article 21C's.[284] Texas and California both occupy substantially larger geographic areas than North Carolina, and the topographic characteristics of both states offer drastically larger potential for onshore

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[283] *See* Letter from Paul Paine, Chair, Tex. Military Preparedness Comm'n, to Tex. Governor Rick Perry (2012) (cover letter to TEX. MILITARY PREPAREDNESS COMM'N, OFFICE OF THE GOVERNOR, TEXAS—THE DEFENSE COMMUNITY—BIANNUAL REPORT 2011-2012 (2012), available at http://governor.state.tx.us/files/military/2011-12_TMPC_Annual_Report.pdf) (noting "that the military and defense industry is attributable for much of Texas economic prosperity" including "an economic impact . . . of over $140 billion with a domestic disposable income of approximately $54 billion[,] making the military and defense industry one of the largest economic sectors in the state"); Office of Cal. Governor Edmund G. Brown Jr., *Governor Brown Convenes State Military Council* (Mar. 28, 2013), http://gov.ca.gov/news.php?id=17973 (expressing California Governor Jerry Brown's position that "military bases and activities are vital to our state's economy").

[284] *See supra* notes 134-42 and accompanying text (enumerating the limited number of states that have wind-specific siting authorities).

wind generation.[285] With more space and more wind, these states have more flexibility to site wind facilities in areas where they are less prone to encroach on military activities. But wind-farm-related encroachment issues may still arise.[286]

Southeastern coastal states from Louisiana to Virginia have virtually no installed wind power generation capacity.[287] Even though their onshore wind potential may be relatively low, their offshore capacities can be several orders of magnitude higher.[288]

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[285] *See* AM. WIND ENERGY ASS'N, TEXAS WIND ENERGY 2 (Mar. 6, 2014), available at http://awea.files.cms-plus.com/FileDownloads/pdfs/Texas.pdf (reporting that Texas's "onshore wind potential at 80 meters hub height is 1,901,530 MW" according to the National Renewable Energy Laboratory); AM. WIND ENERGY ASS'N, CALIFORNIA WIND ENERGY 2 (Mar. 6, 2014), available at http://awea.files.cms-plus.com/FileDownloads/pdfs/California.pdf (reporting California's onshore potential at 34,110 MW); AM. WIND ENERGY ASS'N, NORTH CAROLINA WIND ENERGY 1, available at http://awea.files.cms-plus.com/FileDownloads/pdfs/northcarolina.pdf (accessed Mar. 10, 2014) (reporting North Carolina's onshore potential at 808 MW).

[286] *See, e.g.,* Losco & Collick, *supra* note 85, at 236-38 (relating a case study of wind turbines causing, in the opinion of air traffic controllers, "an immediate and daunting air safety issue" for Travis Air Force Base, Calif.).

[287] AM. WIND ENERGY ASS'N, *supra* note 282, at 6.

[288] *See, e.g.,* AM. WIND ENERGY ASS'N, NORTH CAROLINA WIND ENERGY, supra note 285, at 1 (reporting North Carolina's offshore potential at 297,456 MW).

Each of those states hosts military installations.[289] Their geographic areas are more approximate in size to that of North Carolina's than is Texas's. Because the U.S. offshore utility wind energy industry is still in its infancy, there is no empirical or anecdotal evidence to suggest that those states' lack of wind-specific siting authority in general, lack of a military consultation requirement specifically, or identifiable military activity encroach concerns have impeded onshore or offshore wind farm development in any of those similarly situated states.

Nor is there any apparent movement to close specific military bases due to encroachment by wind farms or other renewable energy facilities. But unchecked wind farm encroachment could have an alternative consequence, also undesirable from the state's perspective. Rather than closing bases, Congress could act to preempt the states in the field of wind turbine siting altogether. In her article *The Tipping Point of Federalism*,[290] Amy Stein proposes that "[t]he ability of a federal agency to step in and address the national interest on the margins can create a release valve to reduce the pressure on Congress to act formally to tip the balance of power."[291] Article 21C turns

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[289] U.S. Dep't of Def., *supra* note 282, http://www.militaryinstallations.dod.mil.

[290] *Supra* note 123.

[291] *Id*. at 271.

this idea on its ear by inviting the federal agency (in this case DoD) into the state's process to act as the release valve.[292]

From the state's perspective, the merits of North Carolina's choice to implement article 21C's novel consultation requirement can really only be assessed by ascertaining the extent that its outcomes align with the state's values. So what are those values? MLPA's "Legislative findings" provision[293] (quoted above[294]) expresses the General Assembly's "utmost concern" over land use that may endanger the military's "future presence in North Carolina."[295] Article 21C has no findings section or other expression of legislative intent, but after H.B. 484 initially passed in the state House of Representatives, an announcement on Representative Chuck McGrady's web site justified

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[292] Under North Carolina's state constitution, the General Assembly is prohibited from delegating its legislative authority, but it may enact statutes that delegate to outside agencies the authority to make fact-finding determinations "upon which the application of a statute to particular situations will depend." *Foster v. N.C. Med. Care Comm'n*, 195 S.E.2d 517, 523 (N.C. 1973). *See also In re McClain*, 741 S.E.2d 893, 896 (N.C. Ct. App. 2013) (applying the *Foster* standard in the context of a state body applying facts determined according to a federal standard), *review denied*, 743 S.E.2d 188 (N.C. 2013).

[293] N.C. GEN. STAT. § 143-151.72 (2013).

[294] *Supra* text accompanying note 275.

[295] § 143-151.72.

the bill by noting that "[w]ind farms . . . pose a threat to military training programs . . . ."[296]

In the end, article 21C indicates a value prioritization by North Carolina: wind energy development may be desirable, but it takes a back seat to keeping military bases and activity in the state. Military bases are a known and present value, while wind energy is in some regards an unproven and not universally favored technology.[297] To the extent the General Assembly intended this trade-off, the new law serves as a reasonable and defensible measure, despite its conceding at least some authority over siting.

Establishing that the state may properly concede that authority does not necessarily imply that DoD can—or should—act on that concession. The following section of this thesis will assess the propriety of DoD interjecting itself into a state wind farm permitting action at the level of formality contemplated by article 21C.

An Unauthorized Veto Exercised by a Federal Agency?

In evaluating whether DoD can properly accept the soft veto delegated by North Carolina, two considerations are relevant. The first is whether any U.S. government action in this regard is consistent with federalism principles. The second is whether DoD itself has the authority to accept the delegated power.

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[296] nchouse117.com - Legislative News from Representative Chuck McGrady, *supra* note 229, http://nchouse117.com/preserving-military-readiness/.

[297] *Supra* notes 10-27 and accompanying text.

Any discussion of the federalism implications associated with electric generation facility siting must first recognize that, as explained above, the authority to permit such facilities is a state function, not a national one.[298] Stein's article examines how "competing federalism virtues," some supporting centralized (national) decision-making while others support state or local control, influence the locus of electric power plant siting authority.[299] While Stein argues in favor of a shift to centralized control of electric power resource selection and generation facility siting, her article presents a well-rounded survey of both sides' virtues.[300] She lists the following factors that generally favor decentralized control: an increased opportunity for public involvement, better accountability, the learning benefit of different states experimenting with different policies, more effective health and welfare protections, sensitivity to local cultural concerns, and "diffused power to protect liberty."[301] Ideally, any shift from decentralized to centralized power will not undermine or impinge on the state or local entity's interests regarding these factors.

Of the decentralization benefits Stein lists, article 21C most affects accountability and public access. As an executive branch agency, DENR is accountable to the

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[298] *Supra* notes 118-46 and accompanying text.

[299] Stein, *supra* note 123, at 247-62.

[300] *Id*.

[301] *Id*. at 257 (internal footnotes omitted) (citing Robert Glicksman & Richard E. Levy, *A Collective Action Perspective on Ceiling Preemption by Federal Environmental Regulation: The Case of Global Climate Change*, 102 NW. U. L. REV. 579, 600 (2008)).

governor,[302] who in turn is accountable to the North Carolina electorate. Citizens interested in wind energy, firms looking to develop wind projects in the state, and other interested parties can participate in article 21C's public hearings as well as exert influence over the state's political processes. But neither the Clearinghouse nor DoD are beholden to the local stakeholders in this way.

U.S. government agencies are obligated to adhere to the federalism principles outlined in Executive Order (E.O.) 13,132.[303] While E.O. 13,132 is primarily applicable to formal rulemaking and legislative proposals, it enumerates certain "Fundamental Federalism Principles" to guide federal agencies:

> (a) Federalism is rooted in the belief that issues that are not national in scope or significance are most appropriately addressed by the level of government closest to the people.
>
> (b) The people of the States created the national government and delegated to it enumerated governmental powers. All other sovereign powers, save those expressly prohibited the States by the Constitution, are reserved to the States or to the people.
>
> (c) The constitutional relationship among sovereign governments, State and national, is inherent in the very

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[302] N.C. GEN. STAT. § 143B-9 (2013).

[303] 64 Fed. Reg. 43,255 (Aug. 10, 1999).

> structure of the Constitution and is formalized in and protected by the Tenth Amendment to the Constitution . . . .[304]

When DoD published part 211's final rule in December 2013, it "certified that [part 211] does not have federalism implications, as set forth in [E.O.] 13,132. This rule does not have substantial direct effects on . . . [t]he relationship between the National Government and the States[,] or [t]he distribution of power and responsibilities among the various levels of Government."[305] As the regulation was drafted, and as the Clearinghouse is chartered as described above, that is an accurate certification. But by enacting article 21C, North Carolina introduced the chance that the Clearinghouse could, if it accepts the implied invitation to participate more directly in a traditionally state-centric process, affect that distribution of power. This does not invalidate part 211, and for that matter does not suggest that it would be expressly illegal or unconstitutional for DoD to execute the soft veto. But from a policy standpoint, these considerations do inform an analysis of whether that execution would be consistent with federalism principles.

"Cooperative federalism" refers to collaboration between national and subnational governments in matters traditionally reserved to one side of the dual federalism

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[304] *Id*. at 43,255-56.

[305] Mission Compatibility Evaluation Process, 78 Fed. Reg. 73,085, 73,088 (Dec. 5, 2013) (codified at 32 C.F.R. pt. 211).

equation.[306] This concept is usually understood in the context of power distributed from the federal government to the state or local government,[307] but less frequently it can describe power transfers in the opposite direction.[308] Either way, its proponents argue that rather than undermining dual federalism values, cooperative federalism, or "dynamic federalism" as it is sometimes known, actually protects those values while also promoting comity and beneficial redundancy.[309] Recognizing the ascendance of this dynamic theory

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[306] Salkin & Ostrow, *supra* note 10, at 1053-1054. The notion of cooperative federalism dates back to the New Deal era. *See* Edward S. Corwin, *National-State Cooperation—Its Present Possibilities*, 46 Yale L.J. 599, 601 (1937) (observing that "[t]he two governmental centers may be envisaged as *more or less jealous rivals for power*, or they may be viewed as *mutually supplementing agencies of government*") (emphasis in original). More recently, commentators have used other terms, including "dynamic federalism." Kirsten H. Engel, *Harnessing the Benefits of Dynamic Federalism in Environmental Law*, 56 Emory L.J. 159, 162 (2006).

[307] *See, e.g.*, Salkin & Ostrow, *supra* note 10, at 1054 (stating that "[c]ooperative federalism statutes typically outline the contours of a regulatory program and empower states to implement the program in accordance with federal guidelines").

[308] *See, e.g.*, *Governmental Techniques for the Conservation and Utilization of Water Resources: An Analysis and Proposal*, 56 Yale L.J. 276, 299-302 (1947) (discussing "Delegation of State Powers to other States or to the Federal Government").

[309] Engel, *supra* note 306, at 176 (citing Robert A. Schapiro, *Toward A Theory of Interactive Federalism*, 91 Iowa L. Rev. 243, 288 (2005)).

of federalism allows us to understand article 21C's consultation requirement and soft veto element as non-violative of federalism principles generally. After all, the federal government did not coerce North Carolina into transferring this power; rather the state gave it freely.

This may assuage any concerns about the federal government (writ large) overstepping its bounds were it to act as article 21C may allow, but it does not necessarily follow that the Secretary of Defense, the part 211 "senior officer," or the Clearinghouse can, within their own statutory and regulatory authority, properly act in that capacity. NDAA 2011 and part 211 are ambiguous in this regard, at best.

The statutes establishing the positions and enumerating the responsibilities of the Secretary of Defense,[310] Deputy Secretary of Defense[311] (the "senior officer" under part 211[312]), and USD-AT&L[313] (the "senior official" under part 211[314]) are generally broad but contain no express or implied authority to intervene in subnational governmental discretionary functions. With respect specifically to taking advantage of article 21C's

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[310] 10 U.S.C. § 113 (2012)

[311] § 132.

[312] 32 C.F.R. § 211.5(a) (2013).

[313] 10 U.S.C. § 133. The Clearinghouse and its parent entity, DUSD-I&E, are subordinate to USD-AT&L. Office of the Under Sec'y of Def. for Acquisition, Technology, and Logistics, U.S. Dep't of Def., *AT&L Offices*, http://www.acq.osd.mil/offices.html (accessed Mar. 10, 2014).

[314] 32 C.F.R. § 211.5(b).

soft veto, NDAA 2011 and part 211 invite two competing points of view on those officials' authority.

The first point of view would be that article 21C's consultation requirement and all interactions that flow from it (outside of the coincidental review of any associated FAA Form 7460-1), from the perspective of DoD and the Clearinghouse, are nothing more than a request for an informal review.[315] As discussed above, besides requiring official determinations for all OE/AAA applications,[316] NDAA 2011 directs DoD to "establish procedures for . . . the coordinated consideration of and response to a request for a review received *from State and local officials* or the developer of a renewable energy development or other energy project, . . . and ensure a coordinated Department response . . . ."[317] Likewise, part 211 expressly contemplates that state or local officials can request informal reviews.[318] If any consultation under article 21C is, as this point of view would hold, simply a request for an informal review, then the Clearinghouse would be acting within its express authority to respond.[319]

The more compelling point of view is that the nearly inevitable ramification of an adverse determination—permit denial—transcends the intuitive scope of an "informal" consultation. Congress empowered the Secretary of Transportation to report the results

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[315] *See supra* notes 216-221 and accompanying text (discussing informal reviews).

[316] NDAA 2011, Pub. L. No. 111-383, § 358(c)(2), 124 Stat. at 4199.

[317] § 358(c)(3), 124 Stat. at 4199 (emphasis added).

[318] 32 C.F.R. § 211.7(b)(2)(ii)(B). .

[319] *Id*.

of OE/AAA aeronautical studies in an official capacity to interested parties.[320] While he or she must allow DoD to review and comment on those studies,[321] there is no corollary requirement or authorization for the Secretary of Defense to report or otherwise promulgate the results of those review or the comments (including determinations of unacceptable risk to national security) except to Congress.[322]

Recall also that, with a formal review resulting in a determination of unacceptable risk to national security, the Deputy Secretary of Defense (in his or her capacity as "senior officer") must transmit that final determination to the Secretary of Transportation.[323] This responsibility is nondelegable.[324] By contrast, the Clearinghouse conveys the results of informal reviews to the requester, whether the requester is a project proponent or a state or local official.[325]

If an article 21C consultation was truly only an informal review request, this distinction would give rise to an irreconcilable incongruity. For an OE/AAA determination, only the Deputy Secretary of Defense—the second highest ranking person in the department—has the authority to make a final negative determination, and even then may only convey that determination to a co-equal cabinet department *within* the

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[320] 49 U.S.C. § 44718(b)(2).

[321] § 44718(e).

[322] NDAA 2011 § 358(e)(3).

[323] 32 C.F.R. § 211.6(b)(2)(iii); § 211.6(c)(3).

[324] § 211.5(a).

[325] § 211.7(b)(2)(ii).

federal government. But for an article 21C consultation (if it were legitimately an informal review), personnel at a much lower level in the bureaucracy (the Clearinghouse) could not only make a negative determination, but also convey that determination to an outside, sovereign government knowing that it will result in denial of a permit application. This incongruity suggests that, while NDAA 2011 and part 211 allow for informal engagement, the scope of that allowance should not extend as far as to permit execution of the soft veto.

A comparison the standards defining adverse determinations under NDAA 2011, part 211, and article 21C also weighs against a conclusion that article 21C consultations fall under part 211's informal review umbrella. NDAA 2011 seeks to identify projects that will pose an "unacceptable risk to the national security of the United States."[326] While Congress did not define that term, part 211 does, but applies the standard only to formal reviews, not to informal ones.[327] Regarding training and operations, the risk must rise to the level of a "significant" impairment or degradation.[328] Article 21C mandates permit denial if the project would "have a significant adverse impact" on military activities.[329]

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[326] NDAA 2011 § 358(e)(2).

[327] *See* 32 C.F.R. § 211.7(b)(2)(ii) (requiring the Clearinghouse to determine whether "the project will have an adverse impact on military operations and readiness" during an informal review but not requiring that the adverse impact be "significant").

[328] § 211.2(l).

[329] N.C. GEN. STAT. § 143-215.120 (2013).

That both standards invoke the qualifier "significant" is noteworthy—especially because the standard applicable to informal reviews only requires the Clearinghouse to ascertain if the project would cause "an adverse impact."[330] There is no requirement that the impact be "significant" for the Clearinghouse to report it in a response to request for informal review and use that finding to initiate mitigation discussions. Only the Deputy Secretary of Defense can approve the finding of significance common to the formal review process and article 21C's standard. Because the Clearinghouse's informal review determinations are held to a lower standard, it is reasonable to conclude that neither Congress nor part 211's drafters intended the informal review process to serve an end so dispositive as is possible under article 21C.

So while the federal agency's potential intervention into a state decision-making process may not run afoul of federalism principles, in the case of DoD such an intervention—at a minimum—attenuates the federal actors' statutory and regulatory authorities. Because there has yet to be a formal determination by DoD of unacceptable risk to national security under part 211 or a permit denial by DENR under article 21C, the risks incurred by this attenuation are speculative. But they may include, for example, a claim by the project proponent that DoD executing the soft veto amounts to a

[330] 32 C.F.R. § 211.7(b)(2)(ii).

compensable regulatory taking, especially given the lower standard applicable to informal review.[331]

The final section of this thesis will articulate why, if DoD implements appropriate safeguards to mitigate the risk of overreach, North Carolina's article 21C ought to stand as a model wind permitting statute, at least for states is which DoD maintains a significant installation footprint.

A Model for States to Emulate

In North Carolina, recent experience suggests that military bases and wind energy development can coexist, even after implementation of article 21C. In January 2012 (long before introduction of H.B. 484), renewable energy development firm Invenergy "abandoned" its plan to construct the 49-turbine Pantego Wind Energy facility (Pantego)

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[331] See *Penn Cent. Transp. Co. v. City of N.Y.*, 438 U.S. 104, 127 (1978) (noting that government action "that substantially furthers important public policies may so frustrate distinct investment-backed expectations as to amount to a 'taking'") (citing *Pa. Coal Co. v. Mahon*, 260 U.S. 393 (1922)). See also *Koontz v. St. Johns River Water Mgmt. Dist.*, 133 S. Ct. 2586, 2600 (2013) (holding that denial of a land-use permit after applicant declined to comply with conditions disproportionate to public benefit resulted in a taking). Inverse condemnation claims are difficult to substantiate, and the merits of such a claim would by nature be case-specific; even a general consideration of this cause of action is beyond the scope of this thesis.

in eastern North Carolina in light of "conflicts between the proposed wind turbines and low-flying F-15E jets" operating near Seymour Johnson Air Force Base.[332] Two years later (and after article 21C's enactment), the Air Force reported that Invenergy agreed to mitigation including relocating certain turbines to distances no less than four miles from the centerline of an air route used to access the Dare County Bombing Range.[333]

This success story might have occurred even without article 21C's mandatory consultation requirement and the threat of its prohibition on issuing permits for projects that would significantly impair or degrade military operations. But as Stein points out in her article, one of the advantages of decentralized regulation is the opportunity for states to act as public policy laboratories, experimenting with laws and regulations so that other jurisdictions may learn from their efforts.[334] With this in mind, other states—especially

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[332] John Murawski, NewsObserver.com, *Proposed Pantego wind farm stalls* (Jan. 12, 2013), http://www.newsobserver.com/2013/01/12/2600290/proposed-pantego-wind-farm-stalls.html. Pantego also faced opposition stemming from FWS's assessment that the facility would kill as many as 21 bald eagles each year. *Id*.

[333] Air Combat Command, *DOD, Invenergy reach agreement on Pantego Wind Energy Project* (Jan. 13, 2014), http://www.acc.af.mil/news/story.asp?id=123376558. *See also* INVENERGY WIND DEV., LLC, U.S. DEP'T OF DEF., & U.S. AIR FORCE, *supra* note 209, http://www.acq.osd.mil/dodsc/library/Final%20Pantego%20agreement_6JAN2014%20As%20Amended%20for%20Public%20View.pdf (memorializing the terms of the mitigation agreement).

[334] Stein, *supra* note 123, at 257.

those with economies heavily dependent on military bases—may do well to pay close attention to North Carolina's wind siting experience under article 21C. If successful, this statute could serve as a model not only for wind siting, but also for other forms of development that pose military base encroachment difficulties.

States not willing to go so far as to concede to a federal agency a notional veto over its own permitting practices could draft around that concern. This could be done by incorporating balancing language into its permit standards. For example, the relevant standard in article 21C could be amended with the following italicized language:

> (a) Permit Approval. - [DENR] shall approve an application for a permit for a proposed wind energy facility or proposed wind energy facility expansion unless [DENR] finds any one or more of the following:
>
> . . .
>
> (2) Construction or operation of the proposed wind energy facility or proposed wind energy facility expansion would encroach upon or would otherwise have a significant adverse impact on the mission, training, or operations of any major military installation or branch of military in North Carolina and result in a detriment to continued military presence in the State*, to the extent that this detriment would outweigh the public benefit associated with the proposed wind energy facility or proposed wind*

> *energy facility expansion*. In its evaluation, [DENR] may consider whether the proposed wind energy facility or proposed wind energy facility expansion would cause interference with air navigation routes, air traffic control areas, military training routes, or radar based on information submitted by the applicant pursuant to [the permit application requirements], and any information received by [DENR] pursuant to [the military consultation requirement]. *In determining whether any detriment to continued military presence outweighs the public benefit associated with the proposed wind energy facility or proposed wind energy facility expansion,* [*DENR*] *shall not substitute any assertions made by the applicant or any outside organization for its own independent judgment.*[335]

This modification would make clear to all parties, especially the permitting agency, that DoD's or the Clearinghouse's input is advisory rather than being a potentially dispositive soft veto. This is but one possible solution. Non-legislative alternatives may include drafting administrative rules to eliminate any perceived ambiguity about the weight of DoD's input into the state permitting process.

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[335] N.C. GEN. STAT. § 143-215.120 (2013) (emphasis added to denote this author's original recommended additional language).

From DoD's perspective, the North Carolina model provides reassurance that the wind energy industry's growth will not outpace the department's ability to protect its training and operational interests. To avert any actual or perceived attenuation of authority by the Clearinghouse or the Deputy Secretary of Defense (acting in the senior officer role), DoD should consider revising part 211 to require state and local governments, when initiating a review request, to indicate whether the request is made pursuant to a statutory or regulatory consultation requirement (like that of article 21C). If it is, an amended process could require the Clearinghouse to treat the request as a formal review rather than an informal one. This would ensure that reviews that may precipitate a permit denial are vetted with the same rigor and uniformity as an OE/AAA review.

Conclusion

Wind farms' potential to encroach on military bases and activities is only one of many competing interests to which state or local permitting authorities must pay heed. Wind turbines pose a very real threat to military aviation and other operations. States hosting military bases are sensitive to the need to expand their energy resource portfolios without jeopardizing bases that are important economic engines. This potential conflict is not unique to North Carolina, but that state has contrived a unique permitting regime to balance those interests.

As this thesis has shown, article 21C raises complex considerations regarding federalism principles and the virtues of decentralized control of electricity generation

facility siting. And the potential finality of an adverse determination by officials in DoD in the course of responding to an article 21C consultation invites questions whether such a determination is an overreach.

Each of these issues merits careful consideration, but neither should be considered fatal to the North Carolina model. The state must have the latitude to prioritize its interests and legislate based on those priorities. Article 21C promises to be a worthy experiment in energy facility siting policy. This thesis has shown that other states with interests similar to North Carolina will be well served to watch the results and be ready to implement or improve on this model.